David Burnham Tanner

Education:

B.A. (Physics)	University of Virginia	1966
M.S. (Physics)	University of Virginia	1967
Ph.D. (Physics)	Cornell University	1972
Postdoctoral Associate	University of Pennsylvania	1972–1974

Faculty Positions:

Assistant Professor of Physics	The Ohio State University	1974–1979
Associate Professor of Physics	The Ohio State University	1979–1982
Professor of Physics	University of Florida	1982–2000
Chairman, Department of Physics	University of Florida	1986–1989
Distinguished Professor of Physics	University of Florida	2000–present

Other Positions:

Visiting Professor	Technical University of Denmark	Lyngby, 1985
Associate Director	Microfabritech Program	1986–1988
Interim Co-director	Microfabritech Program	1988
Affiliate Professor of Chemistry	University of Florida	1989–present
Visiting Professor	McMaster University	Hamilton, 1991
Visiting Professor	University of Tokyo	Kashiwa, 2010

Professional Societies and Honors:

Phi Beta Kappa, 1966
Sigma Pi Sigma, 1966
Sigma Xi, 1967
Fellow, American Physical Society, 1989
University of Florida Research Foundation Professor, 2009–12; Term Professor, 2019–22
Florida Blue Key Distinguished Faculty Award, 2010
APS Journals Outstanding Referee, 2013
Frank Isakson Prize for Optical Effects in Solids, American Physical Society, 2016
Special Breakthrough Prize in Fundamental Physics for the observation of gravitational waves (with 1015 others in LIGO and Virgo), 2016
Gruber Cosmology Prize (with 1015 others in LIGO and Virgo), 2016
Wolfgang K.H. Panofsky Prize in Experimental Particle Physics, American Physical Society, 2024

Email: `tanner@phys.ufl.edu`
WWW: `http://www.phys.ufl.edu/~tanner/`

Address:
2372 New Physics Building
University of Florida
Gainesville, Florida 32611-8440

(352) 392-4718, (352) 392-0521

Current research interests:

I am presently involved in research in two areas of experimental physics: astrophysics (axions and gravitational waves) and condensed matter (optical properties of novel materials).

Experimental Astrophysics:

Axion search

The University of Florida is a member the Axion Dark Matter eXperiment (ADMX), searching for axions as a component of the dark-matter halo of the Galaxy. The discovery of the axion, or placing strong limits on its existence, would have profound implications for two of the most important problems in contemporary physics: (i) the origin of CP symmetry in the strong interactions, and (ii) the composition of the dark matter that makes up approximately 30% of the mass of the universe.

Many observations imply the existence of large halos of non-luminous matter surrounding galaxies. Much of the dark matter is thought to be non-baryonic; leading candidates are finite-mass neutrinos, weakly interacting massive particles, and axions. Among these, the axion is special in the sense that a laboratory experiment can be carried out with current technology that can detect the particle at the expected level of abundance.

The experiment exploits the fact that axions may be stimulated to convert into microwave photons in a microwave cavity threaded by a large magnetic field. This detection method was proposed in 1983 by Pierre Sikivie of the UF physics department and was developed during pilot experiments at Brookhaven and at UF. The detector consists of a large superconducting magnet containing one or more microwave cavities; axions that enter the high-field region will be stimulated to decay into microwave photons when these photons are resonant in the cavity. The detector is tuned by changing the cavity resonant frequency.

With Pierre Sikivie and Neil Sullivan, I contributed to the design and construction in the 1990s of the UF pilot axion detector. Many of the features of this detector were incorporated into ADMX, a large-scale experiment, now located at the University of Washington. The Florida ADMX group contributed a high-resolution spectral analysis package to this experiment. UF also participated in the design and construction of an upgrade to this experiment, called Generation-2 ADMX. The upgrade included installing a dilution refrigerator to reduce the cavity temperature to 100 mK. UF has designed and build cavities will be used in the upcoming data run over 1–2 GHz and then over 2–4 GHz.

Since 2017, ADMX has been operating with ultralow noise SQUID-based amplifiers. The low operating temperature reduces the noise background. ADMX is now sensitive to what is called the the "DFSZ axion," meaning that it is able to detect the most likely (and most weakly coupled* kind of axion.

LIGO

LIGO, the Laser Interferometer Gravitational-Wave Observatory project, consists of two 4-km-arm Michelson interferometers for the purpose of detecting and studying gravitational waves. These waves, first predicted by Einstein more than 100 years ago, were first detected by LIGO in 2015. The LIGO detector consists of separate laser interferometers in Washington State and in Louisiana. These instruments, essentially very sensitive laser rangefinders, use interferometric techniques to make extremely precise measurement of the distance between test masses located 2.5 miles (4 kilometers) apart. If the test masses are subjected to a gravitational wave, their positions will change in a well-defined way; it is the resulting motion that LIGO is designed to detect. The motivation for having more than one interferometer is to allow discrimination between local disturbances and the gravitational waves.

There are many sources of gravitational waves in our universe: collisions of neutron stars, collisions of black holes, supernova events, and relic waves from the birth of the universe in the big bang. The LIGO detectors have the sensitivity to observe these events to distances of six billion light years , thus opening an absolutely unique window into these phenomena.

Advanced LIGO was commissioned in 2015 and promptly (on September 14) observed the inspiral of two black holes. Two years later, a neutron-star inspiral was detected, beginning the era of multimessenger astronomy. In the intervening years almost 90 such events are in the catalog.

I am part of the University of Florida LIGO group. UF's initial role in LIGO was to build and deliver the so-called "input optics" of intital LIGO. The IO is one of the most complex parts of the detector, being all of the components between the laser source and the main interferometer. It includes the RF modulators used for the instrument control system, Faraday isolators, beam expanders and mode-matching optics, beam steering, and a 14-m long, suspended-mirror ring cavity that serves as a mode cleaner.

LIGO upgrades (enhanced LIGO and Advanced LIGO) required improvements to the input optics. New RF modulators and improved Faraday isolators, capable of handling 200 W of CW laser power, were developed.

A current upgrade, called "A+" will employ squeezing to enhance the sensitivity. Our UF group has recently made and delivered low-loss Faraday isolators for A+.

The UF LIGO group has recently joined the Cosmic Explorer consortium. Cosmic Explorer is a proposed ground-based detector with 40-km arms, 10 times longer than LIGO. We are working on the conceptual design of the input/output optics of Cosmic Explorer.

Optical properties of solids:

* One can construct axion models in which the coupling is zero. These models are in one way or another somewhat unnatural.

Optical effects in solids occur in the wavelength range from the far infrared through the near ultraviolet. My group studies materials by optical reflectance or transmittance over this entire range. We have spent a lot of time and effort to achieve coverage over a very broad spectral range (more than a factor of 10^4). Our emphasis is on obtaining accurate reflectance values on small, often anisotropic, crystals at temperatures between 10 and 400 K. Analysis of these data *via* Kramers-Kronig techniques give estimate the optical conductivity and dielectric function.

Other techniques employed include electrical resistance, photoluminescence, and pump/probe experiments. Some details are given in the following sections.

High-temperature superconductors

More than 35 years after their discovery, open questions remain in the physics of high-T_c superconductors. Studies of their optical properties provide information about the superconducting condensate, about the vibrational spectrum, about low-energy electronic properties, and about the electronic band structure. This information is required for determining the superconducting mechanism. Studies have been made on $YBa_2Cu_3O_{7-\delta}$, $Bi_2Sr_2CaCu_2O_8$, $Tl_2Ba_2CaCu_2O_8$, $La_{2-x}Sr_xCuO_4$, $La_{2-x}Ba_xCuO_4$, and $Nd_{2-x}Ce_xCuO_{4-y}$ materials.

Among the results are the discovery of the non-Drude "midinfrared" absorption, the first observation of the collapse of the quasiparticle scattering rate at the superconducting transition, and the demonstration that spectral features thought to represent the superconducting energy gap were from other causes. Other experiments have probed the anisotropy in the CuO_2 plane, measurements on thin films and small crystals, doping studies, and studies at the National High Magnetic Field. Current studies focus on the spectral weight associated with the superconducting condensate as a function of material system and doping.

Conducting polymers

Novel synthetic techniques employed by collaborators in Chemistry synthesized conductive polymers with good environmental stability and desirable optical properties. The structure, transport, optical, and luminescence properties of these materials have been measured, giving information about the semiconducting band gap, doping-induced electronic features (polarons and bipolarons), and vibrational states.

Low dimensional organic and inorganic systems

Several organic compounds display high electric conductivity and even superconductivity. The conductivity is unexpected, because organic (covalent) materials are generally insulators. The superconductivity is also unexpected and unexplained. The electronic structure of these materials and of related inorganic crystals has been studied through infrared and optical measurements. These measurements have provided evidence for a variety of novel phenomena, including anomalous electron/molecular vibration coupling, solitons, charge density waves, and spin density waves.

Time resolved measurements with synchrotron light

Synchrotron radiation has proved to be a useful source of infrared radiation on account of the high brightness of the synchrotron source. A second feature of the synchrotron

infrared source is that the electrons in the synchrotron ring exist in bunches, so that the light is pulsed. The existence of this pulse structure makes the synchrotron able to do a class of very important experiments that cannot be done in any other way: infrared time-resolved or pump-probe spectroscopy.

Time-resolved infrared and far-infrared spectroscopy has been done at the National Synchrotron Light Source (NSLS). This facility permitted the study of time-dependent infrared and far-infrared phenomena with a temporal resolution of ~200 ps. This facility was used to study the dynamics of metallic superconductors and compound semiconductors. There are plans to build an improved time resolved facility at the NSLS II in the next few years.

Diffractive optics

Metal films perforated with arrays of subwavelenth holes, or with corrugated structures around individual holes, have shown extraordinary optical transmission, with the transmission at certain wavelengths larger than the geometric optics and *much* larger than the prediction of physical optics. (Geometric optics would say that the transmission equals the open area fraction of the holes; our experiments reach 3 to 4 times this value. Physical optics says that the geometric optics result is reduced by the fourth power of hole diameter to wavelength.) Studies of scaling of this phenomenon suggest that it is a coherent diffraction effect, and cast doubt on the conventional explanation of it as due to surface plasmon excitation.

Terahertz electronics

My group has characterized the emission of silicon-based semiconductor circuits prepared by Kenneth O and Texas Instruments. These chips emit measurable power at frequencies up to 0.6 THz, a world's record for silicon electronics.

Small particle physics

Infrared measurements have been performed to study the effects of size quantization in small-particle systems as well as to investigate the effective dielectric function of randomly inhomogeneous media.

Outside Professional Activities:

Consultant, Xerox Webster Research Center, 1978–1993.
SURA Materials Science Advisory Committee, 1984–1987.
APS Frank Isakson Prize Committee, 1988–1991, Chair in 1990.
SESAPS Pegram Award Committee, 1991–1993, Chair in 1993.
Consultant, Bionetics Corporation (NASA contractor), 1993–1994.
National Synchrotron Light Source UV Science Proposal Study Panel, 1996–1997.
Visiting Committee, Emory University Department of Physics, 1998.
APS March Sorter 2001, 2003, 2004, 2005, 2006, 2007, 2013, 2014, 2015, 2016, 2017, 2018.
American Physical Society Committee on Meetings, 2001–2003, Chair in 2002.
American Physical Society Task Force on Meetings Information Systems, 2004-2005.
Vice Chair, Division of Condensed Matter Physics of the APS, 2004–2005.
Chair Elect, Division of Condensed Matter Physics of the APS, 2005–2006.
Chair, Division of Condensed Matter Physics of the APS, 2006–2007.
Past Chair, Division of Condensed Matter Physics of the APS, 2007–2008.
Committee for NSLS-II, 2005.
Technical Advisory Committee for the Caltech 40-m interferometer. 2005–2018.
Editorial Board, Physical Review B, 2006–2011.
Chair, LIGO Elections and Membership Committee, 2011–2019.
APS Frank Isakson Prize Committee, 2011–2013.
External reviewer, Institute for Basic Science of Korea, 2012.
Member at Large, APS Division of Materials Physics Executive Committee, 2013–2016.
Technical Advisor to the LIGO Oversight Committee, 2013–2015.
Member, Beamline Advisory Team for the FIS/MET Beamline at NSLS-II, 2015–2018.
APS David Adler Lectureship Award Committee, 2016.
APS Frank Isakson Prize Committee, 2017.
Visiting Committee, University of South Carolina Department of Physics and Astronomy, 2019.
Review Committee, University of Texas Rio Grande Valley Graduate Physics Program, 2021.
Ombudsperson, LIGO Scientific Collaboration, 2021–present.
APS Frank Isakson Prize Committee, 2023.

Referee for:

Physical Review Letters, Physical Review B, Physical Review D, ACS Applied Materials & Interfaces, ACS Omega, Advanced Functional Materials, American Journal of Physics, Applied Optics, Applied Physics Letters, Applied Spectroscopy, Applied Materials & Interfaces, Cambridge University Press, Canadian Journal of Physics, Cryogenics, European Physical Journal B, Europhysics Letters, Ferroelectrics, Inorganic Chemistry, Journal de Physique, Journal of Applied Physics, Journal of Chemical Physics, Journal of Low Temperature Physics, Journal of Materials Science, Journal of the Optical Society of America, Journal of Physical Chemistry, Journal

Outside Professional Activities, continued:

of Physics and Chemistry of Solids, Journal of Physics Conference Series, Journal of Quantum Chemistry, Journal of Quantum Electronics, Journal of Superconductivity, Journal of Superconductivity and Novel Magnetism, Journal of Vacuum Science and Technology, Light: Science & Applications, Macromolecules, McGraw-Hill, Molecular Crystals-Liquid Crystals, Nano Letters, Nature, Nature Communications, Optics Express, Optics Letters, Oxford University Press, Physica B, Physica C–Superconductivity, Physics of the Dark Universe, Physics Letters B, Physics Reports, Proceedings of the IEEE, Review of Scientific Instruments, Reviews of Modern Physics, Science, Scientific Reports, Solid State Communications, Synthetic Metals, and Thin Solid Films.

National Science Foundation, Department of Energy, National Aeronautics and Space Administration, Research Corporation, Natural Sciences and Engineering Research Council of Canada, ACS Petroleum Research Fund, Canadian Light Source, National High Magnetic Field Laboratory Users Program, National Synchrotron Light Source Users Program, North Atlantic Treaty Organization, Swiss National Science Foundation, Australian Research Council, Cardiff University, Croatian Science Foundation, Friedrich-Schiller Univerisität Jena, Hungarian Scientific Research Fund (OTKA), International Science Foundation, Jeffress Memorial Trust, Keck Foundation, McMaster University, NHMFL In-House Research Program, Simon Frazier University, Stuttgart University, Sultan Qaboos University (Oman), Technical University of Vienna, University of Adelaide, Universita di Roma "La Sapienza," University of Toronto—Canada Foundation for Innovation, U.S. Civilian Research & Development Foundation, and the Basic Research Foundation of Israel.

Conference Organization:

ETOPIM: Conference on Electrical Transport and Optical Properties of Inhomogeneous Media, Ohio State University, September 7–9, 1977. (Organizing Committee)

Symposium on Quantum Fluids and Solids, Sanibel Island, April 1983. (Organizing Committee)

Forum on Composite Materials Research and Technology, George Mason University, 1985. (Conference Committee)

International School on Materials Science, Energy and Development, University of the West Indies, Jamaica, April 1987. (Scientific Committee)

International Symposium on New Electronic Materials and Devices, Gainesville, 1987. (Organizing Committee)

ETOPIM2 (Second Conference on Electrical Transport and Optical Properties of Inhomogeneous Media), Paris, August 29–September 2, 1988. (Co-chairman with Jaques Lafait)

International Conference on Synthetic Metals, ICSM-88, Santa Fe, June 1988. (Program Committee)

International Conference on Synthetic Metals, ICSM-90, Tübingen, September 1990. (International Advisory Committee)

Conference Organization, continued:

Dark Matter Workshop, Gainesville, February 1992. (Local Organizing Committee)
ETOPIM 3 (Third International Conference on Electrical Transport and Optical Properties of Inhomogeneous Media), Guanajuato, August 1993. (Program Committee)
Second University of Miami Conference on: Electronic Structure and Mechanisms for High Temperature Superconductivity, Miami, January 1995. (Advisory Committee)
Spectroscopic Studies of Superconductors, PHOTONICS WEST '96, San Jose, January 1996. (Program Committee)
ETOPIM 4 (Fourth Conference on Electrical Transport and Optical Properties of Inhomogeneous Media), Moscow–St. Petersburg, July 1996. (Program Committee)
Low Energy Electrodynamics in Solids, Ascona, July 1997. (Advisory Committee)
Axion Workshop, Gainesville, March 1998. (Local Committee)
LIGO Scientific Collaboration Meeting, Gainesville, March 1999. (Local Committee)
Fifth Conference on the Electrical Transport and Optical Properties of Inhomogeneous Media, ETOPIM5, Hong Kong, July 1999. (International Advisory Committee)
LEES 99 (Fourth International Conference on Low-Energy Electrodynamics in Solids, Pécs, June 1999. (International Advisory Committee)
Sixth International Conference on Electrical Transport and Optical Properties of Inhomogeneous Media (ETOPIM 6), Salt Lake City, July 2002. (Program Committee)
LEES 02 (Fifth International Conference on the Low Energy Electrodynamics in Solids), Montauk (Long Island), October 2002. (Program Committee)
New Challenges in Superconductivity: Experimental Advances and Emerging Theories, Coral Gables, January 2004. (Advisory Committee)
LEES 04 (Sixth International Conference on the Low Energy Electrodynamics in Solids), Kloster Banz, July 2004. (Program Committee)
March Meeting of the American Physical Society, Baltimore, March 2006. (Chair, Invited Programs)
Lattice Effects in Superconductors, Santa Fe, April 2006. (Advisory Committee)
LEES 06, Low Energy Electrodynamics in Solids, Tallinn, July 2006. (Advisory Board)
March Meeting of the American Physical Society, Denver, March 2007. (Chair)
Gravitational Wave Advanced Detector Workshop (GWADW), Ft. Lauderdale, May 2009. (Co-chair and Program Committee)
Axions 2010, Gainesville, January 2010. (Conference Chair)
Gravitational Wave Advanced Detector Workshop (GWADW), Kyoto, May 2010. (Program/Advisory Committee)
LEES2010, Low Energy Electrodynamics in Solids, Les Diablerets, Switzerland, July 2010. (Advisory Board)
Gravitational Wave Advanced Detector Workshop (GWADW), Elba, May 2011. (Program/Advisory Committee)
LIGO/Virgo Collaboration Meeting, Gainesville, September 2011. (Chair)
LIGO/Virgo Collaboration Meeting, Boston, March 2012. (Organizing Committee)
Gravitational Wave Advanced Detector Workshop (GWADW), Hawaii, May 2012. (Program/Advisory Committee)

Conference Organization, continued:

8th Patras Workshop on Axions, WIMPs and WISPs, Chicago, July 2012. (Organizing Committee)

LEES 2012, Low Energy Electrodynamics in Solids, Napa, California, July 2012. (International Advisory Committee)

Gravitational Wave Advanced Detector Workshop (GWADW), Elba, May 2013. (Program/Advisory Committee)

LIGO/Virgo Collaboration Meeting, Nice, March 2014. (Organizing Committee)

10th International LISA Symposium, Gainesville, May 2014. (Local Committee)

Gravitational Wave Advanced Detector Workshop (GWADW), Takayama, Japan, May 2014. (Advisory Committee)

LEES 2014, Low Energy Electrodynamics in Solids, Amboise, July 2014. (International Advisory Committee)

NSF Condensed Matter Physics Principal Investigators Workshop Arlington, July 2014. (Conference Chair)

Conference on Broader Impacts in Research Arlington, January 2015. (Conference Chair)

Gravitational Wave Advanced Detector Workshop (GWADW), Girdwood, Alaska, May 2015. (Advisory Committee)

NSF Condensed Matter Physics 2015 Principal Investigators Workshop Arlington, June 2015. (Conference Chair)

International Workshop on Infrared Microscopy and Spectroscopy with Accelerator Based Sources (WIRMS 2015). Long Island, October 2015. (Program Committee)

LEES 2016, Low Energy Electrodynamics in Solids, Lake Biwako, May–June 2016. (International Advisory Committee)

NSF Condensed Matter Physics 2016 Principal Investigators Workshop Arlington, June 2016. (Conference Chair)

Miami 2017 Ft Lauderdale, December 2017. (Session co-organizer)

LEES 2018, Low Energy Electrodynamics in Solids, Portonovo, Ancona, Italy, June 2018. (International Advisory Committee)

LEES 2021, Low Energy Electrodynamics in Solids, Virtual, June 2021. (Local Organizing Committee)

LEES 2013, Low Energy Electrodynamics in Solids, St. Pölten, Austria, June 2023. (International Advisory Committee)

Axions beyond the dark matter paradigm, Hamburg, January 2024. (Organizing Committee)

Book:

Optical Effects in Solids, David B. Tanner (Cambridge University Press, Cambridge, 2019).

Books Edited:

1. *Electrical Transport and Optical Properties of Inhomogeneous Media,* edited by J.C. Garland and D.B. Tanner (American Institute of Physics, New York, 1978).
2. *ETOPIM2—Proceedings of the Second International Conference on the Electrical Transport and Optical Properties of Inhomogeneous Media,* edited by J. Lafait and D.B. Tanner (North-Holland, Amsterdam, 1989).
3. *Axions 2010,* edited by David B. Tanner and K.A. van Bibber (American Institute of Physics, New York, 2010).

Theses:

1. *Temperature dependence of the resistivity of silver films,* M.S., University of Virginia, 1967.
2. *Some size effects in metals in the far infrared*, Ph.D., Cornell University, 1972.

Invited Review Articles:

1. "Optical properties of one-dimensional systems," D.B. Tanner in *Extended Linear Chain Compounds, Vol. 2,* edited by Joel S. Miller (Plenum Press, New York, 1982) pp. 205–258.
2. "Far-infrared properties of inhomogeneous materials," G.L. Carr, S. Perkowitz, and D.B. Tanner in *Infrared and Millimeter Waves, Vol. 13,* edited by Kenneth J. Button (Academic Press, Orlando, 1985) pp. 171–263.
3. "Infrared properties of high-T_c superconductors," T. Timusk and D.B. Tanner in *Physical Properties of High-Temperature Superconductors I,* edited by Donald M. Ginsberg (World Scientific, Singapore, 1989) pp. 339–407.
4. "Optical properties of high-temperature superconductors," D.B. Tanner and T. Timusk in *Physical Properties of High-Temperature Superconductors III,* edited by Donald M. Ginsberg (World Scientific, Singapore, 1992) pp. 363–469.
5. "Multicolored electrochromism in polymers: Structures and devices," A.A. Argun, P-H. Aubert, B.C. Thompson, I. Schwendeman, C.L. Gaupp, J. Hwang, N.J. Pinto, D.B. Tanner, A.G. MacDiarmid, and J.R. Reynolds, *Chem. Mater.* **16**, 4401–4412 (2004).
6. "Observation of Gravitational Waves from a Binary Black Hole Merger," B.P. Abbott *et al.* (the LIGO Scientific Collaboration & the Virgo Collaboration) in *Centennial of General Relativity: A Celebration* edited by César Augusto Zen Vasconcellos (World Scientific, Singapore, 2017) pp. 291–312. (LIGO-P1600247-v1)

Papers in archival journals:

1. "Electrical resistivity of silver films," D.B. Tanner and D.C. Larson, *Phys. Rev.* **166**, 652–655 (1968).
2. "Far-infrared measurements of the energy gap of V_3Si," D.B. Tanner and A.J. Sievers, *Phys. Rev. B* **8**, 1978–1981 (1973).
3. "Fluctuation contribution to the far-infrared transmission of lead films," D.B. Tanner, *Phys. Rev. B* **8**, 5045–5054 (1973).
4. "Infrared conductivity of tetrathiofulvalene tetracyanoquinodimethane (TTF-TCNQ) films," D.B. Tanner, C.S. Jacobsen, A.F. Garito, and A.J. Heeger, *Phys. Rev. Lett.* **32**, 1301–1305 (1974).
5. "Single-crystal reflectance studies of tetrathiofulvalene tetracyanoquinodimethane," C.S. Jacobsen, D.B. Tanner, A.F. Garito, and A.J. Heeger, *Phys. Rev. Lett.* **33**, 1559–1562 (1974).
6. "Far-infrared absorption in small metallic particles," D.B. Tanner, A.J. Sievers, and R.A. Buhrman, *Phys. Rev. B* **11**, 1330–1341 (1975).
7. "Infrared studies of the energy gap in tetrathiofulvalene-tetracyanoquinodimethane (TTF-TCNQ)," D.B. Tanner, C.S. Jacobsen, A.F. Garito, and A.J. Heeger, *Phys. Rev. B* **13**, 3381–3404 (1976).
8. "The 38 K transition in TTF-TCNQ viewed as a percolation phenomenon," F.P. Pan, D. Stroud, and D.B. Tanner, *Solid State Commun.* **20**, 271–275 (1976).
9. "Infrared opaque heat shield with high thermal conductance for use in changing magnetic fields," D.B. Tanner, G.G. Ihas, and K.A. Muething, *Rev. Sci. Instrum.* **48**, 610–612 (1977).
10. "Infrared studies of the energy gap and electron-phonon interaction in potassium-tetracyanoquinodimethane (K-TCNQ)," D.B. Tanner, C.S. Jacobsen, A.A. Bright, and A.J. Heeger, *Phys. Rev. B* **16**, 3283–3290 (1977).
11. "The critical fields of superconducting palladium hydride," D.R. Krahn, R.L. Henry, D.B. Tanner, and P.E. Wigen, *Phys. Stat. Sol. (a)* **46**, 209–212 (1978).
12. "A lamellar grating interferometer for the far-infrared," R.L. Henry and D.B. Tanner, *Infrared Phys.* **19**, 163–174 (1979).
13. "Far-infrared measurements of Holstein processes and low energy $\alpha^2_{tr}F(\omega)$ structure in V_3Si," S.W. McKnight, S. Perkowitz, D.B. Tanner, and L.R. Testardi, *Phys. Rev. B* **19**, 5689–5693 (1979).
14. "Optical properties of the semiconducting 'metal-like' complex $(NMe_3H)(I)(TCNQ)$," D.B. Tanner, J.E. Deis, A.J. Epstein, and J.S. Miller, *Solid State Commun.* **31**, 671–675 (1979).
15. "Comparison of Fourier and laser spectroscopy in the far-infrared–submillimeter range," S. Perkowitz, R.L. Henry, and D.B. Tanner, *Appl. Opt.* **18**, 2349–2351 (1979).
16. "Far-infrared ordinary-ray optical constants of quartz," K.D. Cummings and D.B. Tanner, *J. Opt. Soc. Am.* **70**, 123–126 (1980).

Papers in archival journals, continued:

17. "Optical and electron-energy-loss studies of the monomeric and dimeric phases of decamethylferrocenium tetracyanoquinodimethanide, (DMeFc)(TCNQ)," D.B. Tanner, Joel S. Miller, M.J. Rice, and J.J. Ritsko, *Phys. Rev. B* **21**, 5835–5845 (1980).
18. "Search for maximum metallic resistance in random metal-particle composites," J.C. Garland, W.J. Gully, and D.B. Tanner, *Phys. Rev. B* **22**, 507–511 (1980).
19. "Absorption of far-infrared radiation by random metal particle composites," N.E. Russell, J.C. Garland, and D.B. Tanner, *Phys. Rev. B* **23**, 632–639 (1981).
20. "Critical behavior of the dielectric constant of a random composite near the percolation threshold," D.M. Grannan, J.C. Garland, and D.B. Tanner, *Phys. Rev. Lett.* **46**, 375–378 (1981).
21. "Dimensionality crossover in the organic superconductor tetramethyltetraselenafulvalene hexafluorophosphate [$(TMTSF)_2PF_6$]," C.S. Jacobsen, D.B. Tanner, and K. Bechgaard, *Phys. Rev. Lett.* **46**, 1142–1145 (1981).
22. "Anomalous far-infrared absorption in random small-particle composites," G.L. Carr, R.L. Henry, N.E. Russell, J.C. Garland, and D.B. Tanner, *Phys. Rev. B* **24**, 777–786 (1981).
23. "Far-infrared study of the charge density wave in tetrathiafulvalene tetracyanoquinodimethane (TTF-TCNQ)," D.B. Tanner, K.D. Cummings, and C.S. Jacobsen, *Phys. Rev. Lett.* **47**, 597–600 (1981).
24. "Optical properties of cesium tetracyanoquinodimethanide, $Cs_2(TCNQ)_3$," K.D. Cummings, D.B. Tanner, and Joel S. Miller, *Phys. Rev. B* **24**, 4142–4154 (1981).
25. "Optical properties of the cation-deficient platinum chain salt $K_{1.75}Pt(CN)_4 \cdot 1.5H_2O$," L.H. Greene, D.B. Tanner, A.J. Epstein, and Joel S. Miller, *Phys. Rev. B* **25**, 1331–1338 (1982).
26. "Far-infrared absorption by fine-metal-particle composites," P.N. Sen and D.B. Tanner, *Phys. Rev. B* **26**, 3582–3587 (1982).
27. "Conversion of *cis*-polyacetylene to *trans*-polyacetylene during doping," D.M. Hoffman, H.W. Gibson, A.J. Epstein, and D.B. Tanner, *Phys. Rev. B* **27**, 1454–1457 (1983).
28. "Correction of phase errors in Fourier spectroscopy," C.D. Porter and D.B. Tanner, *Int. J. Infrared and Milli. Waves* **4**, 273–298 (1983).
29. "Poly(1,6-heptadiyne), a free-standing polymer film dopable to high electrical conductivity," H.W. Gibson, F.C. Bailey, A.J. Epstein, H. Rommelmann, S. Kaplan, J. Harbour, X.Q. Yang, D.B. Tanner, and J.M. Pochan, *J. Am. Chem. Soc.* **105**, 4417–4431 (1983). See also *J. Am. Chem. Soc.* **105**, 6531 (1983).
30. "Anomalous infrared absorption in granular superconductors," G.L. Carr, J.C. Garland, and D.B. Tanner, *Phys. Rev. Lett.* **50**, 1607–1610 (1983).

Papers in archival journals, continued:

31. "Role of solitons in nearly metallic polyacetylene," A.J. Epstein, H. Rommelmann, R. Bigelow, H.W. Gibson, D.M. Hoffman, and D.B. Tanner, *Phys. Rev. Lett.* **50**, 1866–1869 (1983).
32. "Epstein *et al.* respond" (to "Comment on 'Role of solitons in nearly metallic polyacetylene'"), A.J. Epstein, H. Rommelmann, R. Bigelow, H.W. Gibson, D.M. Hoffman, and D.B. Tanner, *Phys. Rev. Lett.* **51**, 2020 (1983).
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Invited Talks:

1. "Infrared studies of TTF-TCNQ," *Lake Arrowhead Conference on One-Dimensional Conductors* (Lake Arrowhead, 2 May 1974).
2. "Infrared and optical properties of TCNQ salts," *American Chemical Society Annual Meeting* (Chicago, 30 August 1977).
3. "Far infrared properties of superconducting composites," *Fifth International Conference on Infrared and Millimeter Waves* (Würzburg, 7 October 1980).
4. "Low temperature infrared studies of TTF-TCNQ," *Conference on Low Dimensional Conductors* (Boulder, 13 August 1981).
5. "Optical and infrared absorption in composite materials," *Ohio Section—American Physical Society* (Akron, 7 May 1982).
6. "Anomalous far infrared absorption in random small particle composites," *Southeastern Section—American Physical Society* (Lexington, KY, 28 October 1982). *Bull. Am. Phys. Soc.* **27**, 739 (1982).
7. "Anomalous far infrared absorption in small-particle systems," *Gordon Research Conference—Chemistry and Physics of Solids* (Plymouth, NH, 6 July 1983).
8. "Electromagnetic propagation in random composite materials," *Symposium on the Physics and Chemistry of Porous Media* (Ridgefield, CT, 25 October 1983).
9. "Converting science into technology: A case study from a university perspective," *Conference on Industrial Science and Technological Innovation* (Raleigh, 16 May 1984).
10. "Optical properties of heavily-doped polyacetylene," *International Conference on the Physics and Chemistry of Low Dimensional Synthetic Metals* (Abano Terme, 18 June 1984).
11. "Anomalous far infrared absorption in small metal particles," *March Meeting of the American Physical Society* (Baltimore, 26 March 1985). *Bull. Am. Phys. Soc.* **30**, 252 (1985).
12. "Are Conducting Polymers Plastic Metals?" *Danish Physical Society* (Copenhagen, 15 May 1985).
13. "Optical properties of heavily doped polyacetylene," *Danish Physical Society, Topical Meeting on Synthetic Metals* (Copenhagen, 18 June 1985).
14. "Far-infrared properties of low-dimensional conductors," *The 10th International Conference on Infrared and Millimeter Waves* (Lake Buena Vista, 11 December 1985).
15. "Infra-red and optical properties of small particle composites," *International school and Workshop on Materials Science, Energy and Development* (Kingston, Jamaica, 8 April 1987).
16. "High T_c research at UF," *Conference on Federal and State Superconductivity Research: Implications for Business and Industry* (Orlando, 9 December 1987).

Invited Talks, continued:

17. "Studies of electron-electron and electron-phonon interactions in high-T_c superconductors," *Twelfth International Conference on Infrared and Millimeter Waves* (Lake Buena Vista, 14 December 1987).
18. "Optical properties of high-T_c superconductors," *1988 Aspen Winter Conference on Condensed Matter Physics* (Aspen, 21 January 1988).
19. "High-temperature superconductivity: Applications and demonstration," *Motorola Technical Symposium* (Fort Lauderdale, 10 February 1988).
20. "Infrared absorption in K-doped $(CH)_x$," *International Conference on the Science and Technology of Synthetic Metals* (Santa Fe, 30 June 1988).
21. "Infrared studies of high-T_c materials," *SIAM workshop on Random Media and Composites* (Leesberg, Virginia, 7 December 1988).
22. "Infrared studies of high-T_c superconductors," *Workshop on Localized Excitations in Low-Dimensional Materials* (Los Alamos, 13 December 1988).
23. "Infrared properties of high-T_c superconductors," *Winterschool on Electronic Properties of Polymers and Related Compounds* (Kirchberg, Austria, 15 March 1989).
24. Three lectures on "Optical properties of high-temperature superconductors," at the *14th International Nathiagali Summer College on Physics and Contemporary Needs* (Nathiagali, Pakistan, 17, 18, and 19 June 1989).
25. "Infrared Properties of high-T_c superconductors," *Third European Conference on Low-Dimensional Conductors and Superconductors* (Dubrovnik, 19 September 1989).
26. "Infrared studies of highly-conducting polyacetylene," *Southeast Region of the American Chemical Society* (Winston-Salem, 10 October 1989).
27. "An infrared look at the high T_c superconductors," *Optical Society of America Annual Meeting* (Orlando, 15 October 1989).
28. "Infrared: Properties and detector applications," *1989-90 Superconductivity Symposium: An Academia/Industry Information Exchange* (Tallahassee, FL, 19 January 1990).
29. "Optical studies of high-temperature superconductors," *Workshop on Electronic Mechanisms of High-Temperature Superconductivity* (Miami, 26 January 1990).
30. "Infrared studies of high-T_c superconductors," *Gordon Research Conference—Superconductivity* (Ventura, CA, 19 March 1990).
31. "Infrared absorption by granular metals," *Materials Research Society Spring Meeting* (San Francisco, 16 April 1990).
32. "Infrared studies of laser-deposited high-T_c films," *Conference on the Science and Technology of Thin-Film Superconductors* (Denver, 1 May 1990).
33. "Infrared studies of high-T_c superconductors," *XVII International Quantum Electronics Conference* (Anaheim, 22 May 1990).

Invited Talks, continued:

34. "Infrared measurements of high-T_c superconductors: Where's the gap?" *Canadian Association of Physicists Annual Congress* (St Johns, Newfoundland, 18 June 1990).
35. "Infrared studies of high-T_c superconductors: where's the gap?" *Electronic Structure and Mechanisms for High Temperature Superconductivity* (Miami, 3 January 1991).
36. "Infrared spectra of high-T_c compounds," *March Meeting of the American Physical Society* (Cincinnati, 20 March 1991). *Bull. Am. Phys. Soc.* **36**, 437 (1991).
37. "Infrared studies of high-T_c superconductors: where's the gap?" *Southeastern Section of the American Physical Society* (Durham, 11 November 1991).
38. "Electron-phonon effects in the infrared spectra of high T_c superconductors," *Lattice Effects in High-T_c Superconductors* (Santa Fe, 13 January 1992).
39. "Optical conductivity of the high-T_c's: Search for the energy gap," *US-Japan Seminar on Electronic Structure and Fermiology of High-T_c Superconductors* (Sendai, 28 July 1992).
40. "Cosmic axion search," *International School 'Particles and Cosmology'* (Baksan Neutrino Observatory, Russia, 27 April 1993).
41. "Infrared conductivity of high-temperature superconductors," *6^{th} International Symposium on Superconductivity* (Hiroshima, 28 October 1993).
42. "Concepts for higher-Q and higher-f cavities," *Strategies for the Detection of Dark Matter Particles* (Berkeley, 23 February 1994).
43. "The *ab*-plane conductivity of high-T_c superconductors," *The University of Miami Workshop on High Temperature Superconductivity* (Miami, 5 January 1995).
44. "The far-infrared conductivity of oxide superconductors," *The Second International Workshop on Low-Energy Electrodynamics in Solids* (Třešť, Czech Republic, 30 June 1995).
45. "*ab*-plane anisotropy in the copper-oxide superconductors," *Japan-US Seminar: New Far Infrared Sources, Detectors and Solid State Measurements Techniques* (Fujiyoshida City, 10 October 1995).
46. "Synchrotron radiation research and applications," *ANS Florida Section Winter Meeting* (Gainesville, 26 January 1996).
47. "Doping and charge-carrier density effects in the cuprate superconductors," *Spectroscopic Studies of Superconductors* (San Jose, 29 January 1996).
48. "Optical reflectance studies of Ni(dmit)$_2$-based organic conductors," *XXIII European Congress on Molecular Spectroscopy* (Balatonfüred, Hungary, 26 August 1996).
49. "New Phosphors for Flat Panel Display Technologies," *25th Annual Symposium on Applied Vacuum Science and Technology* (Orlando, 18 February 1997).
50. "Superfluid and normal fluid density in high-T_c superconductors," *Low Energy Excitations in Solids, LEES'97* (Ascona, 8 July 1997).

Invited Talks, continued:

51. "Optical properties of 'colossal' magnetoresistance materials," *Physics of Manganites, Ruthenates, and Related Materials* (Tallahassee, 11 November 1997).
52. "Superfluid and normal fluid density in cuprate superconductors," *CIAR Superconductivity Meeting* (Hamilton, 24 January 1998).
53. "Far-infrared studies of $YBa_2Cu_3O_7$ films in high magnetic fields," *March Meeting of the American Physical Society* (Los Angeles, 20 March 1998). *Bull. Am. Phys. Soc.* **43**, 722 (1998).
54. "The NSLS time-resolved infrared facility and applications to solid state physics," *Workshop on Applications of InfraRed Synchrotron Radiation* (Brookhaven National Laboratory, 18 May 1998).
55. "Superfluid and normal fluid densities in the cuprate superconductors," *Miami Conference on high-temperature superconductivity* (Miami, 11 January 1999).
56. "Superfluid and normal-fluid density in the cuprate superconductors," *4th International Conference on Low Energy Electrodynamics in Solids* (Pécs, 22 June 1999).
57. "Superfluid and normal-fluid densities in the high-T_c superconductors," *6th International Conference on Materials and Mechanisms of Superconductivity and High Temperature Superconductors (M2S-HTSC-VI)* (Houston, 22 February 2000).
58. "Pump-probe studies of solids (mostly superconductors)," *Jefferson Laboratories User Meeting* (Newport News, 20 June 2000).
59. "Far-infrared to visible optical conductivity of single-wall carbon nanotubes," *International Workshop on Quantum Transport in Synthetic Metals* (Seoul, 29 August 2000).
60. "Performance of infrared beamline U12IR at the NSLS," *Low Energy Electrodynamics in Solids* (Montauk, 17 October 2002).
61. "LIGO, the Laser Interferometer Gravitational-wave Observatory," *6th Annual Southeast Ultrafast Optics and Spectroscopy Conference* (Gainesville, 17 January 2002).
62. "The superfluid density of the cuprate superconductors estimated using infrared spectroscopy," *New Challenges in Superconductivity: Experimental Advances and Emerging Theories* (Miami, 12 January 2004).
63. "LIGO, the Laser Interferometer Gravitational-wave Observatory," *LEES04. Conference on Low Energy Excitations in Solids* (Kloster Banz, 22 July 2004).
64. "Equilibrium and nonequilibrium far-infrared properties of superconducting MoGe thin films," *LEES'04. Conference on Low Energy Electrodynamics in Solids* (Kloster Banz, 23 July 2004).
65. "On the phase of light diffracted by gratings," *Gravitational Wave Advanced Detectors Workshop (GWADW)* (Aspen, 18 January 2005).

Invited Talks, continued:

66. "Optics with Art: Infrared studies of low-dimensional materials," *Unconventional magnetic and electronic materials: A symposium in honor of Art Epstein's 60th birthday* (Columbus, 4 June 2005).
67. "Spectroscopy of HTSC," *Lattice Effects in Superconductors* (Santa Fe, 19 April 2006).
68. "Drude behavior in the far-infrared conductivity of cuprate superconductors," *LEES 06* (Tallinn, 3 July 2006).
69. "Microwave Cavity Searches for Axions," *2006 Division of Nuclear Physics Annual Meeting* (Nashville, 27 October 2006). *Bull. Am. Phys. Soc.* **51**, 81 (2006).
70. "Time-resolved far-infrared studies in magnetic fields at the NSLS," *Workshop on Design and Applications of FELs for Research with High Magnetic Fields* (Jefferson Laboratory, 22 January 2007).
71. "Time-resolved far-infrared studies at the National Synchrotron Light Source," *Florida AVS* (Orlando, 12 March 2007).
72. "A microwave cavity search for axions," *April Meeting of the American Physical Society* (Jacksonville, 15 April 2007). *Bull. Am. Phys. Soc.* **52**, H3.00003 (2007).
73. "The LIGO input optics," *First LIGO/Virgo Joint Meeting* (Pisa, 24 May 2007).
74. "Infrared Spectroscopy of Solids at the NSLS," *Hard Condensed Matter and Materials Physics Workshop* (Brookhaven, 5 February 2008).
75. "Infrared studies of phase-separated manganite thin films," *2nd Workshop on Novel Electronic Materials* (Lexington, 15 May 2008).
76. "Phase separation in manganite thin films," *Stripes08: Quantum Phenomena in Complex Matter* (Erice, 29 July 2008).
77. "Looking at the charge carriers in the cuprates with infrared: dynamics and spectral weights," *Mini-workshop on High-Tc Superconductivity and Related Questions* (Miami, 13 November 2008).
78. "Resonantly-Enhanced Photon Regeneration," *5th Patras Workshop on Axions, WIMPs, and WISPs* (Durham, 14 July 2009).
79. "Time-resolved spectroscopy of superconductors using synchrotron radiation," *5th International Workshop on Infrared Microscopy and Spectroscopy with Accelerator Based Sources, WIRMS2009* (Banff, 15 Sept 2009).
80. "Supermetallic behavior in Br-doped graphite," *Green Science and Engineering for Health and Environment, GRDC Symposium 2010* (Seoul, 15 November 2010).
81. "Forum: Policy and future direction for the global R&D," five participants, *Green Science and Engineering for Health and Environment, GRDC Symposium 2010* (Seoul, 15 November 2010).
82. "Photons, magnetic fields, Cooper pairs, and quasiparticles: The use of synchrotron sources to study pairbreaking in superconductors," *THz/IR Workshop on Molecular and Materials Science* (Arlington, 14 April 2011).

Invited Talks, continued:

83. "Results from phase 1: Axion Dark-Matter eXperiment," *7th Patras Workshop on Axions, WIMPs and WISPs* (Mykonos, 27 June 2011).
84. "Synchrotron studies of spin and charge dynamics in solids: Photons, magnetic fields, Cooper pairs, and quasiparticles," *Experimental Condensed Matter Physics Principal Investigators' Meeting* (Rockville, 12 August 2011).
85. "Resonantly-enhanced axion photon regeneration," *Fundamental Physics at the Intensity Frontier* (Rockville, 30 November 2011).
86. "Concepts for microwave cavities at higher & lower frequencies," *Vistas in Axion Physics: A Roadmap for Theoretical and Experimental Axion Physics through 2025* (Seattle, 24 April 2012).
87. "High finesse optical cavities," *Vistas in Axion Physics: A Roadmap for Theoretical and Experimental Axion Physics through 2025* (Seattle, 24 April 2012).
88. "Axion overview," *Closing in on Dark Matter* (Aspen, 1 February 2013).
89. "Lasers and optical cavities to search for new particles," *Intensity Frontier Workshop* (Argonne, 25 April 2013).
90. "Infrared synchrotron radiation studies of pairbreaking in superconductors," *A Sesquicentennial in Superconductivity and Metals Physics* (Hamilton, 23 May 2013).
91. "ADMX enters its second generation," *9th Patras Workshop on Axions, WIMPs and WISPs* (Mainz, 25 June 2013).
92. "Experiments towards a cryogenic interferometer: From the sublime to the practical," *Gravitational Wave Advanced Detectors Workshop (GWADW)* (Takayama, 27 May 2014).
93. "Optical spectroscopy and Fermi-surface studies of BiTeX, X = I, Br, Cl," *Gordon Research Conference: Multiferroic & Magnetoelectric Materials* (Biddeford, 13 August 2014).
94. "Challenges and opportunities of advanced gravitational-wave detectors," *Eastern Forum of Science and Technology* (Shanghai, 13 October 2014).
95. "Superfluid and normal-fluid densities in the cuprate superconductors from infrared spectroscopy," *March Meeting of the American Physical Society,* C13.02 (Baltimore, 14 March 2016).
96. "Design considerations for an axion detector," *2016 IEEE Frequency Control Symposium* (New Orleans, 12 May 2016).
97. "Infrared measurements of the superfluid and normal-fluid densities in the cuprate superconductors," *Superstripes 2016* (Ischia, 25 June 2016).
98. "The Advanced LIGO detectors, GW150914, and GW151226", *Miami 2016* (Fort Lauderdale, 19 December 2016).
99. "Higher fields for axion cavity searches and lower frequency axion searches with an LC circuit," *DOE Cosmic Visions Workshop* (College Park, 23 March 2017).

Invited Talks, continued:

100. "Optical spectroscopy of $La_{2-x}Ba_xCuO_4$ single crystals: influence of stripe order," *Superstripes 2017* (Ischia, 7 June 2017).
101. "ADMX Magnet Requirements ," *Magnet Workshop* (Fermilab 13 April 2018).
102. "ADMX: Recent results at the DFSZ frontier and future prospects for axion haloscopes," *Sensitivity Frontier Workshop* (Santa Barbara, 22 May 2018).
103. "ADMX: Recent results at the DFSZ frontier," *Patras 2018* (Hamburg, 18 June 2018).
104. "Advanced LIGO: When black holes collide," Keynote talk, *IEEE International Ultrasonics Symposium, IUS 2020* (Las Vegas, virtually, 8 September 2020).
105. "Seeking the unseen: The Axion Dark Matter eXperient (ADMX)," *APS Mid Atlantic Section Meeting* (Virtual, 4 December 2020).
106. "Unconventional light-matter interactions," *Low Energy Excitatkons in Solids. (LEES 2023)* (St. Pölten, 26 June 2023).

Extramural Seminars and Colloquia:

1. "Size effects in the far infrared," Bell Laboratories, Murray Hill, 3 April 1972.
2. "Far infrared absorption in thin films and small particles," Auburn University, 11 April 1972.
3. "The far infrared absorption in small particles," SUNY Stony Brook, 12 March 1974.
4. "Properties of TTF-TCNQ," Ohio State University, 11 April 1974.
5. "Properties of TTF-TCNQ," UC Irvine, 7 May 1974.
6. "Infrared properties of TTF-TCNQ films," Cornell University, 10 June 1974.
7. "Optical properties of TTF-TCNQ," McMaster University, 17 April 1975.
8. "Optical properties of inhomogeneous media," University of Cincinnati, 9 February 1978).
9. "Optical properties of inhomogeneous media," Xerox Webster Research Center, 17 February 1978.
10. "Optical properties of TCNQ salts: Three ten-minute talks in search of a common theme," Xerox Webster Research Center, 27 April 1978.
11. "Optical properties of organic conductors," University of Cincinnati, 16 April 1979.
12. "Experimental studies of granular superconductors," Cornell University, 11 September 1979.
13. "Optical properties of organic radical-ion solids," Ashland Chemical Research Center, 6 February 1981.
14. "Optical and infrared properties of conducting organic materials," University of Kentucky, 3 March 1981.
15. "Electrical transport and optical properties of small-particle composites," Schlumberger-Doll Research Laboratories, 7 April 1981.

Seminars and Colloquia, continued*:*

16. "Electrical transport and optical properties of small-particle composites," RCA Research Laboratories, Princeton, 7 May 1981.
17. "Optical and infrared properties of one-dimensional conductors," University of Florida, 12 May 1981.
18. "Optical and infrared properties of one-dimensional conductors," Schlumberger-Doll Research Laboratories, 17 June 1981.
19. "Electrical transport and optical properties of small-particle composites," Ford Research Laboratories, Dearborn, 17 September 1981.
20. "Organic conductors, paraconductors, and superconductors," McMaster University, 11 November 1981.
21. "Anomalous absorption in small particles," University of Florida, 8 February 1982.
22. "Infrared and optical properties of conducting polymers," Ohio University, 16 April 1982.
23. "Anomalous far infrared absorption in small particle systems," IBM San Jose, 29 March 1983.
24. "Solitons in conducting polymers?" Schlumberger-Doll Research Laboratories, 2 May 1983.
25. "Solitons in polyacetylene?" Florida State University, 26 September 1983.
26. "Optical properties of organic conductors and superconductors," Chemical Physics, UF, 7 February 1984.
27. "Solitons and polyacetylene?" Emory University, 19 April 1984.
28. "Anomalous far-infrared absorption in small particles," Technische Hogeschool Delft, 27 June 1984.
29. "Anomalous far-infrared absorption by small particles," Katholieke Universiteit Nijmegen, 28 June 1984.
30. "Search for the invisible axion," McMaster University, 5 September 1984.
31. "Anomalous far-infrared absorption by small particles," DuPont Central Research Laboratory, 15 April 1985.
32. "Are conducting polymers plastic metals?" C.N.R.S., Université Paris-Sud, Orsay, 4 June 1985.
33. "Correlations in short chains and small rings," NORDITA, Copenhagen, 6 September 1985.
34. Jointly with C.S. Jacobsen: "Sum rules and optical properties in short chains and small rings," NORDITA, Copenhagen, 10 September 1985.
35. "Are conducting polymers plastic metals?" Odense University, 1 October 1985.
36. "Far infrared absorption by small, metal particles," Chalmers Institute of Technology, Gothenberg, 17 October 1985.

Seminars and Colloquia, continued*:*

37. "Optical properties of small-particle composites," Bell Laboratories, Murray Hill, 14 November 1985.
38. "Anomalous far infrared absorption in small particle composites," Florida Institute of Technology, 21 February 1986.
39. "Physics of conducting polymers," U.F. Polymer Seminar, 9 April 1986.
40. "Search for the invisible axion," Cornell University, 14 April 1986.
41. "Are conducting polymers plastic metals?" Cornell University, 15 April 1986.
42. "Optical properties of composites," Xerox Webster Research Center, 3 September 1986.
43. "Are conducting polymers plastic metals?" University of Kentucky, 1 October 1986.
44. "Infrared studies of high Tc superconductors," Université Pierre-et-Marie-Curie, Paris, 22 June 1987.
45. "Infrared properties of high Tc superconductors," Imperial College, London, 26 June 1987.
46. "Infrared and optical properties of high T_c superconductors," Argonne National Laboratory, Argonne, 30 July 1987.
47. "Infrared optical studies of high-T_c superconductors," Materials Science Department, University of Florida, 1 September 1987.
48. "Infrared studies of high-T_c superconductors," Bell Communications Research, 28 October 1987.
49. "Infrared studies of high-T_c superconductors," duPont Central Research Laboratories, 29 October 1987.
50. "Properties of high-T_c oxide superconductors," University of California at Davis, 8 January 1988.
51. "Infrared studies of high-T_c materials," Naval Research Laboratory, 2 February 1988.
52. "Infrared studies of high-T_c superconductors," Ohio State University, 12 February 1988.
53. "Optical properties of high-T_c superconductors," Xerox Webster Research Center, 3 June 1988.
54. "Search for the invisible axion," Ohio State University, 6 June 1988.
55. "Far-infrared studies of high-temperature superconductors," University of Cincinnati, 7 June 1988.
56. "High Temperature Super Conductivity," UF Physical Chemistry Seminar, 7 February 1989.
57. "Optical studies of high-T_c superconductors," University of Central Florida, 31 March 1989.
58. "An IR look at high-T_c superconductors," University of South Florida, 7 April 1989.

Seminars and Colloquia, continued*:*

59. "The clean limit: Theory and experiment in high- temperature superconductors," Central Research Institute for Physics, Budapest, 26 September 1989.
60. "Infrared spectroscopy of high-T_c superconductors," Universität Wien, Vienna, 27 September 1989.
61. "Optical properties of high T_c superconductors," Virginia Polytechnic University, Blacksburg, 30 November 1989.
62. "Infrared measurements of high-T_c: Where's the gap?" Florida State University, 24 January 1990.
63. "Optical studies of high temperature superconductors," University of Miami, 1 February 1990.
64. "Infrared response of high-T_c superconductors," Hughes Malibu Research Laboratories, 22 March 1990.
65. "Status of the University of Florida Cavity Experiment and a View to the Future," Lawrence Livermore Laboratory, 17 April 1990.
66. "Optical properties of high-T_c superconductors," University of Georgia, 31 May 1990.
67. "High-T_c superconductors: Where's the gap?" Grumman Aircraft Corporation, 8 August 1990.
68. "High-T_c superconductors: Where's the gap?" University of Virginia, 8 February 1991.
69. "Search for the Invisible Axion," Bell Communications Research, 5 June 1991.
70. "The infrared optical properties of the high-temperature oxide superconductors," Xerox Webster Research Center, 3 July 1991.
71. "Optical conductivity of high-T_c superconductors," University of Wisconsin, 4 March 1992.
72. "Infrared conductivity of oxide superconductors," Florida State University, 6 April 1992.
73. "Optical conductivity of high-T_c superconductors," Ohio State University, 16 April 1992.
74. "Detector concepts supporting the search for axions," (with K. Van Bibber and P. Sikivie) National High Magnetic Field Laboratory, 15 October 1992.
75. "Optical conductivity of high-T_c superconductors," University of Utah, 21 January 1993.
76. "Infrared conductivity of high-T_c superconductors," SUNY Stony Brook, 4 June 1993.
77. "High temperature superconductivity: Where's the gap?" University of Cincinnati, 31 January 1994.
78. "Infrared conductivity of high-temperature superconductors," ETH-Zürich, 16 June 1994.

Seminars and Colloquia, continued*:*

79. "Infrared conductivity of high-temperature superconductors," École Polytechnique Fédérale de Lausanne, 17 June 1994.
80. "Infrared conductivity of high-temperature superconductors," Technical University of Budapest, 23 June 1994.
81. "Infrared conductivity of high-temperature superconductors," Technische Universität Graz, 27 June 1994.
82. "Optical properties of solids,", Materials Science Department, UF, 29 September 1994.
83. "High T_c: Anisotropy, conductivity and the absence of a gap," Johns Hopkins University, 2 November 1994.
84. "Doping and charge-carrier density effects in the cuprate superconductors," École Polytechnique Fédérale de Lausanne, 15 June 1995.
85. "Doping and charge-carrier density effects in the cuprate superconductors," Research Institute for Solid State Physics, Budapest, 20 June 1995.
86. "High T_c superconductors: Anisotropy, conductivity and the gap question," Universität Karlsruhe, 5 July 1995
87. "High T_c superconductors: Anisotropy, conductivity and the gap question," Max Planck Institute–Stuttgart, 7 July 1995
88. "Optical studies of high temperature superconductors: Where's the gap?" University of Central Florida, 29 February 1996.
89. "The Laser Interferometer Gravitational-wave Observatory: LIGO," McMaster University, 13 November 1996.
90. "The Laser Interferometer Gravitational-wave Observatory: LIGO," Emory University, 11 April 1997.
91. "The Laser Interferometer Gravitational-wave Observatory: LIGO," University of Illinois, 16 April 1997.
92. "Doping and charge-density effects in cuprate superconductors," University of Illinois, 17 April 1997.
93. "Input Optics Preliminary Design Review," Rana Adhikari, Tom Delker, David Reitze, Qi-Ze Shu, David Tanner, Sanichiro Yoshida, Physics Department, California Institute Of Technology 12 August 1997.
94. "Superfluid and normal fluid density in high-Tc superconductors and related materials," Los Alamos, 14 November 1997.
95. "The Laser Interferometer Gravitational-wave Observatory: LIGO," Jacksonville University, 29 January 1998.
96. "Input/Output Optics Final Design Review," Rana Adhikari, Aaron Bengston, Yasha Buchler, Tom Delker, David Reitze, Qi-Ze Shu, David Tanner, Sanichiro Yoshida, California Institute Of Technology Physics Department, 25 March 1998.

Seminars and Colloquia, continued*:*

97. "LIGO: The Laser Interferometer Gravitational-wave Observatory," University of Kentucky, 30 April 1999.
98. "LIGO—current status and the view from the input end," Glasgow University, 6 July 1999.
99. "High-T_c superconductors—an infrared view of the superfluid," Simon Frazer University, 22 July 1999.
100. "LIGO: The Laser Interferometer Gravitational-wave Observatory," Research Institute for Solid State Physics, Budapest, 23 May 2000.
101. "LIGO: The Laser Interferometer Gravitational-wave Observatory," University of North Florida, 20 October 2000.
102. "LIGO from the input optics perspective," Santa Fe Community College, 8 December 2000.
103. "LIGO from the input optics perspective," North Florida Community College, 9 December 2000.
104. "LIGO, the Laser Interferometer Gravitational-wave Observatory," McMaster University, 17 May 2001.
105. "Infrared view of the superfluid in the cuprate superconductors," University of California, San Diego, 10 October 2001.
106. "LIGO, the Laser Interferometer Gravitational-wave Observatory," University of California, San Diego, 11 October 2001.
107. "LIGO, the Laser Interferometer Gravitational-wave Observatory," University of South Florida, 1 March 2002.
108. "An infrared view of the high-Tc superconductors: Shining light on the superfluid," University of North Florida, 19 April 2002.
109. "Optical properties of charge-transfer conductors and conjugated polymers," Ohio State University, 13 May 2002.
110. "LIGO, the Laser Interferometer Gravitational-wave Observatory," Ohio State University, 14 May 2002.
111. "LIGO, the Laser Interferometer Gravitational-wave Observatory," Technical University of Budapest, 7 June 2002.
112. "The superfluid density of the cuprate superconductors estimated using infrared spectroscopy," École Supérieure de Physique et Chimie Industrielles de la Ville de Paris, 5 June 2003.
113. "Searching for Gravitational Waves with LIGO," University of Florida, 9 September 2004.
114. "Equilibrium and nonequilibrium far-infrared properties of superconducting MoGe thin films," National Synchrotron Light Source, 1 October 2004.

Seminars and Colloquia, continued*:*

115. "Searching for Gravitational Waves with LIGO," University of Cincinnati, 18 November 2004.
116. "Diffractive optics: new tricks from an old subject," McMaster University, 12 October 2006.
117. "Diffractive optics: An old subject teaches us some new tricks," University of Central Florida, 12 February 2007.
118. "Time-resolved spectroscopy using synchrotron radiation: Superconductors and semiconductors," University of Miami, 14 November 2008.
119. "Advanced LIGO," University of Tokyo, 10 May 2010.
120. "Seeking the unseen: gravitational waves with LIGO and axion dark matter with ADMX," University of Tokyo, 12 May 2010.
121. "The superfluid density of high T_c superconductors: what infrared spectroscopy tells us," Seoul National University, 17 November 2010.
122. "The superfluid density of high T_c superconductors: what infrared spectroscopy tells us," Pusan National University, 19 November 2010.
123. "Diffractive optics: An old subject teaches us new tricks," University of Toronto, 8 February 2012.
124. "Photons, magnetic fields, Cooper pairs, and quasiparticles: The use of synchrotron sources to study pairbreaking in superconductors," University of Toronto, 10 February 2012.
125. "Photons, magnetic fields, Cooper pairs, and quasiparticles: Studies at the synchrotron light source of pairbreaking in superconductors," North Carolina State University, 8 October 2012.
126. "Photons, magnetic fields, Cooper pairs, and quasiparticles: Synchrotron studies of pairbreaking in superconductors," University of South Florida, 25 October 2013.
127. "Search for dark-matter axions," Oak Hammock, Gainesville, 31 January 2014.
128. "Photons, magnetic fields, Cooper pairs, and quasiparticles: Pairbreaking in superconductors studied at a synchrotron light source." University of South Carolina, 24 April 2014.
129. "Photons, magnetic fields, Cooper pairs, and quasiparticles: Synchrotron radiation studies of superconductors," University of Tennessee 3 June 2015.
130. "Kramers-Kronig analysis of reflectance: High-frequency extensions matter." University of Tennessee 5 June 2015.
131. "The search for gravitational waves with LIGO and Advanced LIGO," Alachua Astronomy Club, 9 June 2015.
132. "Advanced LIGO and GW150914," Origins Institute, McMaster University, 28 March 2016.
133. "Advanced LIGO and GW150914," Florida State University, 7 April 2016.

Seminars and Colloquia, continued*:*

134. "30 years of high Tc: Superfluid and normal-fluid densities in the cuprate superconductors," University of Virginia, 29 April 2016.
135. "Advanced LIGO, GW150914, GW151226, and beyond," University of North Florida, 14 October 2016.
136. "Advanced LIGO, GW150914, GW151226, and beyond," Boston University, 8 November 2016.
137. "Advanced LIGO, GW150914, GW151226, and beyond," Physics Institute, Stuttgart University, 13 December 2016.
138. "LIGO and the discovery of gravitational waves, 30 stellar-mass black holes, and other things," Oak Hammock, Gainesville, 19 January 2017.
139. "LIGO and the discovery of gravitational waves, 30 stellar-mass black holes, and other things," Ramapo College of New Jersey, 20 April 2017.
140. "Synchrotron studies of non-equilibrium effects in the classic superconductors," Kent State University, 30 November 2017.
141. "Search for the invisible axion: Current status of ADMX," University of South Carolina, 15 February 2018.
142. "Shining light through walls: Generation and detection of axions with ALPS II," University of South Carolina, 23 March 2023.

Grants and Contracts:

"Research towards future gravitational-wave observatories: Lasers, optics, materials, devices, and simulations." PI, with co-I John Conklin.
National Science Foundation, PHY-2309242.

1 July 2023 – 30 June 2024	$300 000
1 July 2024 – 30 June 2025	300 000
1 July 2025 – 30 June 2026	300 000

"Collaborative Research: Cosmic Explorer Optical Design." co-I, with PI Paul Fulda and in collaboration with Syracuse University, MIT, and Caltech.
National Science Foundation, PHY-2309265.

15 August 2023 – 31 July 2024	$271 715
1 August 2024 – 31 July 2025	275 000
1 August 2025 – 31 July 2026	275 000

"Search for dark-matter axions with ADMX." PI, with co-I N.S. Sullivan.
Department of Energy, DE-SC0010296.

1 August 2023 – 31 March 2024	$110 000
1 April 2024 – 31 March 2025	110 000

"ALPS II Science runs and upgrades." PI, with co-I Guido Mueller.
National Science Foundation, PHY-2309918.

1 September 2023 – 31 August 2024	$150 000
1 September 2024 – 31 August 2035	$150 000
1 September 2025 – 31 August 2026	$150 000

"ALPS II: Installation, commissioning and operation," with Guido Mueller, (PI).
Heising-Simons Foundation, 2020-1841.

1 May 2020 – 30 April 2021	$117 236
1 May 2021 – 30 April 2024	121 801

"Ground Testing of the LISA Telescopes part B," PI, with co-I's Paul Fulda and Guido Mueller.
NASA, 80NSSC22K0675.

11 February 2022–10 February 2023	$960 508
11 February 2023–10 February 2024	960 508

"Dark matter new initiatives R&D: Design of the 2-4 GHz resonator system."
Fermi National Accelerator Laboratory, #664572.

1 January 2020 – 31 December 2020	$95 822
1 January 2021 – 31 December 2021	162 363
1 January 2022 – 31 December 2022	103 261
1 January 2023 – 31 December 2023	159 594

Grants and Contracts, continued:

"Search for dark matter axions with ADMX," with N.S. Sullivan and P. Sikivie.
Department of Energy, DE-SC0010296.

1 April 2020 – 31 March 2021	$125 000
1 April 2021 – 31 March 2022	125 000
1 April 2022 – 31 March 2023	125 000

"Technologies for future gravitational-wave observatories: Lasers, optics, materials, cryogenics, and simulations," with John Conklin and Mark Storm.
National Science Foundation, PHY-2012021.

1 July 2020 – 30 June 2021	$300 000
1 July 2021 – 30 June 2022	300 000
1 July 2022 – 30 June 2023	300 000

"ALPS II: Commissioning and data taking," with Guido Mueller (PI).
National Science Foundation, PHY-2110705.

1 September 2021 – 31 August 2022	$200 000
1 September 2022 – 31 August 2023	300 000

Earlier Grant and Contract Support:

"Conference on transport effects in inhomogeneous media," with J.C. Garland (PI), J. Korringa, R.L. Mills, and D. Stroud.
National Science Foundation, DMR-7700313.

1 July 1977 – 31 December 1977	$4 000

U.S. Energy Research and Development Administration, EC-77-C424001.

1 July 1977 – 7 December 1977	$2 500

"Electrical transport and optical properties of random small particle composites," with J.C. Garland (PI).
Department of Energy, AS02-78ER04914.

1 July 1978 – 30 June 1979	$79 009
1 July 1979 – 30 June 1980	93 264
1 July 1980 – 30 June 1981	109 939
1 July 1981 – 30 June 1982	109 939

"Conducting polymers: Magnetic, optical and transport studies," with A.J. Epstein, Xerox Webster Research Center.
National Science Foundation, DMR-8110422.

1 August 1981 – 30 September 1982	$65 000

National Science Foundation DMR-8218021.

1 October 1982 – 31 January 1983	$58 000
1 February 1983 – 31 January 1984	60 300
1 February 1984 – 31 January 1985	86 000

Earlier Grant and Contract Support, continued:

"Charge transport across interfaces," with the Ohio State MRL group (15 faculty), Materials Research Laboratory; award amount (1 August 82 – 30 June 83) $578 717.
National Science Foundation, DMR-8119368.

"Properties of composite materials."
Northern Telecom Ltd, Grant 85092603.

1 June 1985 – 31 May 1987	$20 000

"Conducting polymers: Magnetic, optical and transport studies," with M.J. Rice, Xerox Webster Research Center.
National Science Foundation, DMR-8416511.

1 April 1985 – 31 March 1986	$116 900
1 April 1986 – 31 March 1987	125 200
1 April 1987 – 31 March 1988	124 800

"Structural and electrically conductive polymers: Synthesis, measurement, and theory."
DARPA URI program, K.B. Wagener (PI), 5 participating faculty.
Defense Advanced Research Projects Agency, N00014-86-G-0224.

15 September 1986 – 30 September 1987	$221 000
1 October 1987 – 30 September 1988	65 000
1 October 1988 – 30 September 1989	65 000
1 October 1989 – 30 September 1990	20 000

"Search for the invisible axion—Development project," with Pierre Sikivie and Neil Sullivan.
Department of Energy, FG05-86ER40272.

1 March 1987 – 29 February 1988	$58 000
1 March 1988 – 28 February 1989	58 000
1 March 1989 – 28 February 1990	19 000
1 March 1990 – 28 February 1991	30 000
1 March 1991 – 29 February 1992	20 000
1 March 1992 – 28 February 1993	20 000
1 March 1993 – 28 February 1994	20 000

"High transition temperature superconductors for high performance interconnects."
Part of Defense Advanced Research Projects Agency MDA972-88-J-1006.

1 July 1988 – 30 September 1989	$186 500
1 October 1989 – 30 September 1991	297 000

"Compound semiconductor heterostructures for wave-guided optical sources, detectors, and modulators."
Part of Defense Advanced Research Projects Agency MDA972-88-J-1006.

1 July 1988 – 30 September 1989	$84 000
1 October 1989 – 30 September 1991	48 500

Earlier Grant and Contract Support, continued:

"Infrared properties of oxide superconductors," with S. Etemad, Bell Communications Research.
National Science Foundation, DMR-9101676.

1 June 1991 – 31 May 1992	$78 000
1 June 1992 – 31 May 1993	78 000
1 June 1993 – 31 May 1994	78 000

"Microscope photometer," with J. Harmon and J. Reynolds.
National Science Foundation, DMR-9302158.

1 September 1993 – 31 August 1994	$98 500

"Phosphor Technology Center of Excellence," with scientists at UF, UGa, Ga. Tech, PSU, and OSU.
Part of Advanced Research Projects Agency, MDA972-93-1-0030.

1 July 1993 – 5 August 1994	$41 146
6 August 1994 – 5 August 1995	30 000
6 August 1995 – 5 August 1996	30 000

"Investigations on single-crystal high temperature superconductors by means of optical spectroscopy," with K. Kamarás.
US-Hungarian Joint Fund, J.F.No.271, Research Institute for Solid State Physics, Budapest and University of Florida.

1 October 1993 – 30 September 1994	$7 100 + Ft 798 000
1 October 1994 – 30 September 1995	6 700 + Ft 251 000
1 October 1995 – 30 September 1996	6 700 + Ft 251 000

"Axion search experiment," with Pierre Sikivie.
Department of Energy, FG05-86ER40272.

1 March 1994 – 28 February 1995	$20 000
1 March 1995 – 29 February 1996	20 000
1 March 1996 – 28 February 1997	20 000

"Infrared studies of oxide superconductors"
National Science Foundation, DMR-9403894.

1 June 1994 – 31 May 1995	$90 000
1 June 1995 – 31 May 1996	90 000
1 June 1996 – 31 May 1997	90 000

"Engineering Research Center for Particle Science and Technology," B. Mougdil (PI).
Part of National Science Foundation, EEC-9402989.

1 January 1995 – 31 August 1995	$30 460
1 September 1995 – 31 August 1996	40 460
1 September 1996 – 31 August 1997	29 913

Earlier Grant and Contract Support, continued:

"Synthesis and characterization of correlated electron materials," J.D. Thompson, P.I.
Los Alamos LDRD.

1 October 1995 – 30 September 1996	$17 000
1 October 1996 – 30 September 1997	17 000

"Time-Resolved Far-Infrared Experiments at the National Synchrotron Light Source," with D.H. Reitze, C.J. Hirschmugl, and G.L. Carr.
Department of Energy, FG02-96ER45584.

15 August 1996 – 14 August 1997	$345 318
15 August 1997 – 14 August 1998	108 353

"Input/output optics for LIGO," with G. Mitselmakher and D.H. Reitze.
California Institute of Technology, subcontract from NSF PHY-9210038.

1 October 1996 – 28 February 1998	$280 000
1 March 1998 – 30 August 1999	1 385 838
1 September 1999 – 30 August 2002	270 000

"High Field Optical Studies of Highly Correlated Metals"
National High Magnetic Field Laboratory (in-house research), DMR-9527035.

1 January 1997 – 31 December 1997	$66 611
1 January 1998 – 31 December 1998	75 024

"Axion search experiment," with Pierre Sikivie.
Department of Energy, FG02-97ER41029.

1 March 1997 – 28 February 1998	$10 000
1 March 1998 – 28 February 1999	10 000
1 March 1999 – 28 February 2000	10 000

"Active camouflage polymer coatings: Visible, infrared, and microwave applications," with J.R Reynolds (PI) and K.B. Wagener.
Part of Army Research Office, P-36427-PH.

25 August 1997 – 24 August 1999	$330 000

"Infrared studies of cuprates, superconductors, and correlated metals."
National Science Foundation, DMR-9705108.

1 June 1997 – 31 May 1998	$90 000
1 June 1998 – 31 May 1999	90 000
1 June 1999 – 31 May 2000	90 000

"Gravitational waves and their detection: Research in LIGO," with Guenakh Mitselmakher, Paul Avery, David Reitze, and Bernard Whiting.
National Science Foundation, PHY-9722114.

1 July 1997 – 30 June 1998	$521 000
1 July 1998 – 30 June 1999	450 000
1 July 1999 – 30 June 2000	435 000

Earlier Grant and Contract Support, continued:

"Optical characterization of thin films and relevant materials," with Dorothy John.
Mehl/Biophile.

1 October 1997 – 30 September 1998	$50 000

"Thermo-optical response of high-temperature superconducting films," with Zhuomin Zhang.
National Science Foundation, CTS-9812027.

1 July 1998 – 30 June 1999	$85 000
1 July 1999 – 30 June 2000	85 000

"Effect of transport current on the infrared properties of superconductors"
TerraComm Research.

1 September 1998 – 30 May 2001	$40 000

"US-Hungary Research on the Optical Properties of Fullerenes," with A.F. Hebard, K. Kamarás, and S. Pekker.
National Science Foundation, INT-9902050.

1 July 1999 – 30 June 2002	$55 000

"Methods and Instruments for High-Precision Characterization of LIGO Optical Components," with A. Sergeev, David Reitze(PI), and Guenakh Mitselmakher.
National Science Foundation, PHY-9900786.

1 August 1999 – 31 July 2000	$139 836
1 August 2000 – 31 July 2001	139 836
1 August 2001 – 31 July 2002	139 836

"Electrochromic adaptive infrared camouflage," with J.R Reynolds (PI).
Army Research Office.

1 August 1999 – 31 July 2000	$30 000
1 August 2000 – 31 July 2001	30 000
1 August 2001 – 31 July 2002	43 910
1 August 2002 – 31 July 2003	40 000
1 August 2003 – 31 July 2004	43 910

"Detection of Gravitational Waves: Advanced Research and Development for LIGO," with Guenakh Mitselmakher (PI), David Reitze, and Bernard Whiting.
National Science Foundation, PHY-0070854.

1 July 2000 – 30 June 2001	$435 000
1 July 2001 – 30 June 2002	445 000
1 July 2002 – 30 June 2003	455 000

"MRI—Materials and devices for optical sources and protection of optical sensors"
Part of Army Research Office, DAAD19-00-1-0002.

1 July 2000 – 30 June 2001	$125 000
1 July 2001 – 30 October 2003	160 000

Earlier Grant and Contract Support, continued:

"Radiative Properties and Optical Response of High-Temperature Superconducting Films," with Zhuomin Zhang.
National Science Foundation, CTS-0082969.

15 November 2000 – 14 November 2001	$78 000
15 November 2001 – 14 November 2002	78 000
15 November 2002 – 14 November 2004	78 000

"Development of an Ultrabroad Bandwidth Source for Ultrafast Observation and Control of Physical, Chemical, and Biological Systems," with David Reitze (PI), Alexander Angerhofer, Stephen Hagen, and Valeria Kleiman.
National Science Foundation, MRI-0012345.

1 September 2001 – 31 July 2003	$394 000

"Materials Structural Stability Studies for LISA," with Guido Mueller (PI) and David Reitze.
NASA Goddard, S-65371-G.

16 April 2002 – 15 April 2003	$92 372
16 April 2003 – 30 August 2003	45 000

"Time-resolved Far-infrared Experiments: Implications for Nanotechnology," with D.H. Reitze, C.J. Stanton, and G.L. Carr (NSLS).
Department of Energy, DE-FG02-02ER45984.

1 May 2002 – 30 April 2003	$125 000
1 May 2003 – 30 April 2004	125 000
1 May 2004 – 30 April 2005	125 000
1 May 2005 – 30 April 2006	125 000

"Development of new diagnostic techniques for preliminary and in situ characterization of advanced LIGO optical components," with David Reitze (PI), A. Sergeev, and G. Mitselmakher.
National Science Foundation, PHY-0140110.

1 August 2002 – 31 July 2003	$105 000
1 August 2003 – 31 July 2004	105 000
1 August 2004 – 31 July 2005	110 000

"Support of personnel and the high-power test facility at the LIGO Livingston Observatory," with G. Mitselmakher (PI) and D.H. Reitze.
California Institute Of Technology.

1 September 2002 – 30 August 2003	$110 000
1 September 2003 – 30 August 2004	110 000
1 September 2004 – 30 August 2005	110 000
1 September 2005 – 30 August 2006	110 000
1 September 2006 – 30 August 2007	180 000
1 September 2007 – 30 October 2008	350 000
1 November 2008 – 31 March 2009	52 000

Earlier Grant and Contract Support, continued:

"Multiple Wavelength Photon Sieve Lens," with Paul Holloway (PI), Gary McGuire (ITC), and Art Hebard.
Part of DARPA through the Office of Naval Research, N000140310418.

11 February 2003 – 10 February 2004	$406 324

"Detection of Gravitational Waves: Interferometry, Devices, Materials, and Analysis for LIGO," with Guenakh Mitselmakher (PI), Guido Mueller, David Reitze, and Bernard Whiting.
National Science Foundation, PHY-0244902.

15 June 2003 – 14 June 2004	$485 000
15 June 2004 – 14 June 2005	485 000
15 June 2005 – 14 June 2006	485 000

"Infrared Studies of Cuprate Superconductors."
National Science Foundation, DMR-0305043, and Department of Energy, DE-AI-02-03ER46070.

1 July 2003 – 30 June 2004	$95 742
1 July 2004 – 30 June 2005	95 883
1 July 2005 – 30 June 2007	98 754

"Simultaneous Multiple Wavelength, Multiple Field of View Imaging System," with Paul Holloway (PI), Gary McGuire (ITC), Chuck Schau (Raytheon), and Art Hebard.
Part of DARPA through the Army Research Office, W911NF-04-C-1236.

1 January 2004 – 31 December 2004	$1 100 000
1 January 2005 – 31 December 2005	1 400 000
1 January 2006 – 07 May 2007	1 200 000

"Surface plasmon coupling for enhanced transmission in diffractive optics," with A.F. Hebard.
Raytheon Corporation.

22 March 2004 – 31 December 2004	$85,000
1 January 2005 – 31 December 2005	45,000

"Agile Response Coatings," with J.R. Reynolds (PI).
Part of AFOSR via a subcontract from Wake Forest.

1 July 2005 – 30 June 2006	$13 748

"Benchtop experiment for LISA," with Guido Mueller (PI) and Sergei Klimenko.
National Aeronautics and Space Administration.

1 July 2005 – 30 June 2006	$250 000
1 July 2006 – 30 June 2007	270 000
1 July 2007 – 30 June 2008	270 000

Earlier Grant and Contract Support, continued:

"Prototype advanced LIGO diagnostics and optical components: In situ measurement and control of thermo-optical effects," with David Reitze (PI), G. Mitselmakher, and A. Sergeev.
National Science Foundation, PHY-0457107.

1 August 2005 – 31 July 2006	$82 500
1 August 2006 – 31 July 2007	82 500
1 August 2007 – 31 July 2008	82 500

"University of Florida Participation in ADMX, the Axion Dark-Matter Experiment," with Pierre Sikivie.
Department of Energy, DE-FG02-97ER41029.

1 August 2005 – 31 February 2006	$35 000
1 March 2006 – 31 February 2007	58 000
1 March 2007 – 31 February 2008	58 000
1 March 2008 – 31 February 2009	76 000
1 March 2009 – 31 February 2010	73 000

"Time-Resolved Far-Infrared Spectroscopy of Superconductors, Spintronic Systems, and Quantum Dots," with D.H. Reitze, C.J. Stanton, and G.L. Carr.
Department of Energy, DE-FG02-02ER45984.

1 May 2006 – 30 April 2007	$125 000
1 May 2007 – 30 April 2008	125 000
1 May 2008 – 30 April 2009	125 000

"Detection of Gravitational Waves: Optical Devices, Materials, and Analysis for LIGO," with Guenakh Mitselmakher (PI), Sergei Klimenko, David Reitze, and Bernard Whiting.
National Science Foundation, PHY-0555453.

15 June 2006 – 14 June 2007	$555 000
15 June 2007 – 14 June 2008	575 000
15 June 2008 – 31 May 2009	575 000

"Submillimeter Wave Schottky Diode Circuits in Silicon Technology," with Kenneth O.
IBM, subcontract on DARPA project N66001-05-C-8013.

12 December 2006 – 31 January 2007	$12 989

"Extreme Light Sources Program," with scientists at the University of Florida, Vanderbilt University, North Carolina State University, and ITC Incorporated.
DARPA W31P4Q-08-1-0003.

13 November 2007 – 31 December 2009	$65 000
1 March 2010 – 31 August 2011	63 500

"Stable Recycling Cavities for Advanced LIGO," with D.H. Reitze (PI).
California Institute Of Technology.

1 April 2008 – 1 August 2011	$919 442

Earlier Grant and Contract Support, continued:

"University of Florida LISA Interferometry Simulator," with Guido Mueller (PI) and Sergei Klimenko.
National Aeronautics and Space Administration.

1 May 2008 – 30 April 2009	$230 000
1 May 2009 – 30 April 2010	230 000
1 May 2010 – 30 April 2011	230 000

"Development of high power laser components and in situ contamination monitoring for future terrestrial GW detectors," with David H. Reitze (PI), Guenakh Mitselmakher, and A. Sergeev.
National Science Foundation, PHY-0757968.

15 July 2008 – 30 June 2009	$120 000
15 July 2009 – 30 June 2010	120 000
15 July 2010 – 30 June 2011	120 000

"Detection of Gravitational Waves: Instrument Science and Data Analysis for LIGO," with Guenakh Mitselmakher (PI), Sergei Klimenko, David Reitze, and Bernard Whiting.
National Science Foundation, PHY-0855313.

15 June 2009 – 14 June 2010	$850 000
15 June 2010 – 14 June 2011	850 000
15 June 2011 – 31 May 2012	850 000

"Operations of the Input Optics Subsystem," with D.H. Reitze (PI).
California Institute Of Technology.

1 October 2009 – 30 September 2010	$80 514

"Carbon nanotube-based transparent electrodes for polymer emitting electronics"
NRadiance, LLC.

1 June 2010 – 31 August 2011	$14 307

"Development of high power continuous wave lasers, components, and optical contamination diagnostics for future ground-based gravitational wave detectors"
National Science Foundation, PHY-1101587.

15 July 2011 – 30 June 2012	$85 000

"The Input Optics Subsystem of Advanced LIGO," with Guido Mueller (PI).
California Institute Of Technology.

1 August 2011 – 30 June 2012	$229 830

"Time-Resolved Synchrotron Studies of Spin and Charge Dynamics in Solids," with D.H. Reitze, C.J. Stanton, and G.L. Carr.
Department of Energy, DE-FG02-02ER45984.

14 May 2009 – 13 May 2010	$165 000
14 May 2010 – 13 May 2011	165 000
14 May 2011 – 13 May 2012	165 000
14 May 2012 – 13 May 2013	43 000

Earlier Grant and Contract Support, continued:

"Task N: Research in High Energy Physics - ADMX, the Axion Dark-Matter Experiment," with Pierre Sikivie and Neil Sullivan.
Department of Energy, DE-FG02-97ER41029.

1 March 2010 – 31 February 2011	$95 000
1 March 2011 – 30 June 2012	97 000
1 July 2012 – 31 June 2013	90 000

"Design and test of a cryogenic system for ADMX, the Axion Dark-Matter eXperiment."
Lawrence Livermore National Laboratory.

1 July 2012 – 31 December 2013	$22 000

"The Input Optics Subsystem of Advanced LIGO," with D.H. Reitze (PI, 2008–2011) and G. Mueller (PI, 2011–2014).
California Institute Of Technology.

1 April 2008 – 1 August 2011	$3 431 902
1 September 2011 – 1 July 2014	1 500 000

"Development of High-Frequency Resonant Cavity Prototypes for Axion Dark Matter Detection."
Florida Space Grant Consortium.

15 August 2013 – 14 August 2014	$24 989

"Detection of gravitational waves: Data analysis, detector characterization, and instrument science for Advanced LIGO," with Guenakh Mitselmakher (PI), Sergei Klimenko, and Bernard F. Whiting.
National Science Foundation, PHY-1205512.

1 June 2012 – 31 May 2013	$560 000
1 June 2013 – 31 May 2014	650 000
1 June 2014 – 31 May 2015	650 000

"Condensed Matter Physics Principal Investigator Workshop."
National Science Foundation, DMR-1449587.

15 August 2014 – 31 July 2015	$48 000

"Search for axionic dark matter," with N.S. Sullivan and P. Sikivie.
Department of Energy, DE-SC0010280.

1 July 2013 – 31 March 2014	$85 000
1 April 2014 – 31 March 2015	110 000
1 April 2015 – 31 March 2016	110 000

"Condensed Matter Physics Broader Impacts Workshop."
National Science Foundation, DMR-1522573.

1 February 2015 – 31 January 2016	$48 390

"Condensed Matter Physics 2015 Principal Investigator Workshop'."
National Science Foundation, DMR-1526367.

1 April 2015 – 31 March 2016	$49 300

Earlier Grant and Contract Support, continued:

"Condensed Matter Physics 2016 Principal Investigator Workshop."
National Science Foundation, DMR-1522573.

1 April 2016 – 31 March 2017	$49 000

"Devices and materials for the instrument science of advanced gravitational-wave detectors," with Guido Mueller.
National Science Foundation, PHY-1505598.

1 June 2015 – 31 May 2016	$200 000
1 June 2016 – 31 May 2017	400 000

"Construction and operation of the Generation-2 ADMX detector," with N.S. Sullivan.
Department of Energy, DE-SC0009723.

1 July 2014 – 30 June 2015	$210 000
1 July 2015 – 30 June 2016	220 000
1 July 2016 – 31 December 2017	230 000

"The Generation 2 Axion Dark-Matter Experiment (Gen 2 ADMX)," with N.S. Sullivan.
Department of Energy, DE-SC0009723.

1 March 2013 – 31 March 2018	$950 000

"Axion Dark Matter eXperiment R&D," with N.S. Sullivan.
Heising Simons Foundation, 2015-154.

1 June 2015 – 31 May 2016	$101 454
1 June 2016 – 31 March 2018	102 889

"Any light particle search: collaboration with ALPS at DESY," with Guido Mueller (PI).
National Science Foundation, PHY-1505743.

1 August 2015 – 31 July 2016	$351 000
1 August 2016 – 31 July 2017	351 000
1 August 2017 – 31 July 2018	351 000

"Search for dark-matter axions with ADMX," with N.S. Sullivan and P. Sikivie.
Department of Energy, DE-SC0010296.

1 April 2016 – 31 March 2017	$110 000
1 April 2017 – 31 March 2018	110 000
1 April 2018 – 31 March 2019	110 000

"Use of high-power lasers and strong magnets to detect axions, hidden-sector photons, and vacuum QED," with Guido Mueller, (PI).
Heising-Simons Foundation, 2015-154.

1 May 2016 – 30 April 2017	$307 601
1 May 2017 – 30 April 2018	320 387
1 May 2018 – 30 September 2020	210 475

Earlier Grant and Contract Support, continued:

"ADMX-G2 1–2 GHz resonator design, testing and construction," with N.S. Sullivan.
Fermi National Accelerator Laboratory, 640844.

1 December 2017 – 30 September 2018	$150 851
1 October 2018 – 30 December 2020	150 861

"Search for dark-matter axions with ADMX," with N.S. Sullivan and P. Sikivie.
Department of Energy, DE-SC0010296.

1 April 2019 – 31 March 2020	$110 000

"Devices, materials, and controls for future gravitational-wave detectors," with John Conklin.
National Science Foundation, PHY-1707835.

1 July 2017 – 30 June 2018	$250 000
1 July 2018 – 30 June 2019	300 000
1 July 2019 – 30 June 2021	300 000

"Any light particle searches (ALPS)," with Guido Mueller (PI).
National Science Foundation, PHY-1802006.

1 August 2018 – 31 July 2019	$300 000
1 August 2019 – 31 July 2020	300 000
1 August 2020 – 31 July 2021	200 000

"Low-loss Faraday isolators for A+," with Paul Fulda, PI, and Rodica Martin.
LIGO Laboratory, California Institute of Technology, 75-S434499.

1 May 2019 – 1 September 2021	$212 414

Doctoral students:

1. Richard Lee Henry
   Ph.D., Ohio State University, December 1980.
   "The electromagnetic properties of small metal particle mixtures."
   Scientist, US Air Force Office of Foreign Technology Evaluation.

2. Larry Carr
   Ph.D., Ohio State University, March 1982.
   "Anomalous absorption in granular superconductors."
   Group Leader for Low Energy Spectroscopy, Brookhaven National Laboratory.

3. Kevin David Cummings
   Ph.D., Ohio State University, June 1982.
   "Optical properties of a random small-particle composite."
   Manager, KLA-Tencor, Milpitas, CA.

4. Diane Marie Hoffman
   Ph.D., Ohio State University, December 1982.
   "Infrared optical properties of polyacetylene."
   Diane passed away in 1990; she was an Assistant Professor at VPI.

5. Richard Powell McCall
   Ph.D., Ohio State University, March 1984.
   "Optical properties of large-U, quarter-filled band TCNQ salts."
   Chair, Department of Basic Sciences, St. Louis College of Pharmacy.

6. Young Hoon Kim
   Ph.D., University of Florida, May 1986.
   "Far-infrared absorption by small particles."
   Young passed away in 2020; he was Emeritus Professor of Physics, University of Cincinnati

7. Xiao-Qing Yang
   Ph.D., University of Florida, May 1986.
   "Optical and electronic properties of heavily-doped polyacetylene."
   Staff Scientist, Brookhaven National Laboratory.

8. Hyung-Suk Woo
   Ph.D., University of Florida, May 1990.
   "Optical properties of segmented and oriented polyacetylene."
   Research Professor, Kyungsung University, Busan, Korea.

9. Christian A. Hagmann
   Ph.D., University of Florida, August 1990.
   Co-chair with Neil Sullivan.
   "A search for cosmic axions."
   Scientist, Lawrence Livermore National Laboratory.

Doctoral students, continued:

10. Feng (Frank) Gao
    Ph.D., University of Florida, December 1992.
    "Temperature dependence of infrared and optical properties of high temperature superconductors."
    Technical staff, Skyworks Solutions, Woburn, MA.

11. Janice L. Musfeldt
    Ph.D. in Chemistry, University of Florida, December 1992.
    "Infrared, optical, and luminescent properties of quasi-one-dimensional organic charge transfer salts and polymers."
    Professor of Chemistry, University of Tennessee.

12. Manuel A. Quijada
    Ph.D., University of Florida, May 1994.
    "Anisotropy in the infrared, optical, and transport properties of high temperature superconductors."
    Staff scientist, NASA Goddard.

13. Young-Duck Yoon
    Ph.D., University of Florida, August 1995.
    "Optical properties of doped cuprates and related materials."
    Technical staff, Therma-Wave, Seoul.

14. Nacira (Lila) Tache
    Ph.D., University of Florida, August 1997.
    "Infrared and optical studies of rare earth substitutions in high temperature superconductors."
    Professor, Santa Fe College.

15. Hsiang-Lin Liu
    Ph.D., University of Florida, August 1997.
    "Effects of high magnetic field and substitutional doping on optical properties of cuprate superconductors."
    Professor, National Taiwan Normal University.

16. Dorothy John
    Ph.D. in Materials Science and Engineering, University of Florida, August 1997.
    Co-chair with Paul Holloway.
    "Optical properties of cerium activated calcium thiogallate and strontium sulfide phosphors."
    V.P., Eastern Client / Servers.

17. Joseph D. LaVeigne
    Ph.D., University of Florida, August 1999.
    "Time-resolved infrared spectroscopy at the NSLS U12IR beamline."
    Scientist, Santa Barbara Infrared, Santa Barbara, CA.

Doctoral students, continued:

18. Jungseek Hwang
    Ph.D., University of Florida, May 2001.
    "Electrochemical Spectroscopy of Conjugated Polymers."
    Associate Professor, Sungkyunkwan University.

19. Vladimir A. Boychev
    Ph.D., University of Florida, December 2001.
    "Far-infrared Studies of Superconducting Thin Films and Fabry-Perot Resonators Made of Such Films."
    Owner, House Express LLC, Gainesville, FL.

20. Hidenori Tashiro
    Ph.D., University of Florida, December 2004.
    "Time-resolved infrared studies of superconducting molybdenum-germanium thin films."
    Scientist, Intel Corp., Portland, OR.

21. Andrew Wint
    Ph.D., University of Florida, December 2004.
    "A search for an infrared electrooptic effect in thin high temperature superconducting films."
    Scientist, Applied Plasmonics, Gainesville, FL.

22. Maria Nikolou
    Ph.D., University of Florida, December 2005.
    "*In-situ* spectroscopic studies of single-walled carbon nanotubes and conjugated polymers in electrochromic devices."
    Programme Manager, Said Business School, Oxford University.

23. Minghan Chen
    Ph.D., University of Florida, December 2005.
    "Optical studies of high temperature superconductors and electronic dielectric materials."
    Principal Scientist at Johnson & Johnson Vision Care, Jacksonville.

24. Stacy M. Wise
    Ph.D., University of Florida, May 2006.
    "Sensitivity enhancement in future interferometric gravitational wave detectors."
    Freelance FTIR repair.

25. Kwangje Woo
    Ph.D., University of Florida, August 2006.
    "Transmission properties of sub-wavelength hole arrays in metal films."
    R&D group director, Corning Precision Materials.

Doctoral students, continued:

26. Haidong Zhang
    Ph.D., University of Florida, December 2007.
    "Time-resolved infrared spectroscopy of magnetic semiconductors and superconductors."
    Postdoc, Geophysical Laboratory.

27. Wan Wu
    Ph.D., University of Florida, December 2007.
    "Instrumentation of the next generation gravitational wave detector—triple pendulum suspension and electro-optic modulator."
    Scientist, Scientific Systems and Applications, NASA Langley.

28. Naveen Nagaraja Rao Margankunte
    Ph.D., University of Florida, May 2008.
    "Infrared spectroscopy of complex oxides of phase-separated manganites and electron-doped cuprates."
    Areva Solar, Mountain View.

29. Daniel J. Arenas
    Ph.D., University of Florida, August 2009.
    "Devices and materials for THz spectroscopy: GHz CMOS circuits, periodic hole-arrays and high-frequency dielectric materials."
    Student, University of Pennsylvania Perelman School of Medicine.

30. Nathan C. Heston
    Ph.D., University of Florida, August 2009.
    "Conjugated polymers in bulk heterojunction photovoltaic devices."
    Instructor, California Polytechnic University.

31. Xiaoxiang Xi
    Ph.D., University of Florida, December 2011.
    "Conventional and time-resolved spectroscopy of magnetic properties of superconducting thin films."
    Professor, School of Physics, Nanjing University.

32. Dimitrios Koukis
    Ph.D., University of Florida, December 2011.
    "Transmittance and reflectance spectroscopy of diffractive optical devices."
    Scientist, Intel Corp, Portland.

33. Gill Daily Brubaker (with Peng Jiang)
    Ph.D., University of Florida, August 2012.
    "Assembly of spherical, sub-micron Stöber silica spheres into hexagonal arrays in ethoxylated trimethylolpropane triacrylate."
    Scientist, University of Florida Particle Science Center.

Doctoral students, continued:

34. Kevin Miller
    Ph.D., University of Florida, May 2013.
    "Infrared study of magnetic and electric excitations in novel complex oxides."
    Optical Physicist, NASA Goddard Space Flight Center.

35. Jeffrey Hoskins
    Ph.D., University of Florida, December 2013.
    "A Modulation Sensitive Search for Non-Virialized Axions."
    Scientist and Software Engineer, Photon-X.

36. Zahra Nasrollahi
    Ph.D., University of Florida, May 2014.
    "Spectroscopic studies of polymers in transmissive/absorptive electrochromic devices and of doped graphite."
    University of Tehran

37. Richard Ottens
    Ph.D., University of Florida, December 2014.
    "A study of evanescent-wave heat transfer in a parallel plane geometry."
    Cryogenic Engineer, NASA Goddard Spaceflight Center.

38. Evan Thatcher (with C.J. Stanton)
    Ph.D., University of Florida, December 2015.
    "Resonant frequencies and optical properties of solids."
    Senior Instructor, Oregon State University.

39. Naween Anand
    Ph.D., University of Florida, December 2015.
    "Characterization of electronic systems through optical and transport techniques."
    Postdoc, Argonne National Laboratory.

40. Daniel Voss
    Ph.D., University of Florida, May 2016.
    "Fast alignment control of an optical resonator."
    Adjunct Assistant Professor, Santa Fe College.

41. Berik Uzakbaiuly
    Ph.D., University of Florida, May 2016.
    "Infrared spectroscopy of high purity silicon and silicon immersion gratings."
    Staff Scientist, National Laboratory Astana, Kazakstan.

42. Chang Long
    Ph.D., University of Florida, December 2016.
    "Optical properties of metallic 2-d and 3-d terahertz metamaterials."
    Risk Management Analyst, Regions Bank, New Hampshire.

Doctoral students, continued:

43. Luyi Yan
    Ph.D., University of Florida, December 2016.
    "Optical properties of cuprate superconductors."
    Engineer, Solitron Devices Inc., West Palm Beach.
44. Ryan Goetz
    Ph.D., University of Florida, December 2017.
    "Low loss Faraday isolator for squeezing injection in Advanced LIGO, and radio-frequency amplitude modulation."
    Applied Research Associates, Raleigh.
45. Ian P. Stern
    Ph.D., University of Florida, December 2017.
    "Microwave cavities for high-frequency axion dark matter detectors."
    Scientist, Aerospace Corporation.
46. Nicole Crisosto
    Ph.D., University of Florida, August 2018.
    "Searching for Low Mass Axions with an LC Circuit."
    Engineer, Atom Computing.
47. Shriram Sadashivajois (Neil Sullivan, advisor, DBT co-advisor)
    Ph.D., University of Florida, August 2020.
    "A search for relic axions and their frequency modulation."
    Postdoc, University of California Berkeley
48. Han-Yu Chia
    Ph.D., University of Florida, May 2022.
    "Complex Modulation and its Applications."
    Postdoc, University of Florid.a
49. Vladimir Martinez
    Ph.D., University of Florida, May 2022.
    "Infrared studies of thermal and dilute impurities in high-purity silicon."
    Postdoc, New Jersey Institute of Technology.

Current:

50. Alexander Hipp
51. Nicholas Andrew Johnson
52. Mitchell Solano

Masters students:

1. Neil Edward Russell
   M.S., Ohio State University, June 1977.
   "Infrared absorption of small metallic particles."
   Solutions Architect at Staples.

2. Laura Helen Greene
   M.S., Ohio State University, August 1977.
   "Infrared properties of K(def)CP."
   Professor, Florida State University.

3. Judith Ellen Deis
   M.S., Ohio State University, August 1979.
   "The optical properties of trimethylammonium iodide tetracyanoquinodimethanide."

4. David Robert Kiehl
   M.S., Ohio State University, June 1982.
   "Optical properties of amorphous carbon."
   Project Manager, Kiehl Enterprises.

5. David Scott Black
   M.S., University of Florida, December 1983.
   "Far-infrared optical properties of III-V compound semiconductors."

6. Mona Gertrud Doss
   M.S., University of Florida, December 1987.
   "The preparation of $YBa_2Cu_3O_7$ samples doped with Sr."
   Scientist, Rudolf Instruments, Fairfield, NJ.

7. Dörte Sasse
   M.S., University of Florida, May 1992.
   "Structure of Langmuir-Blodgett Films by FT-IR Spectroscopy."
   Student, Frankfurt, Germany.

8. David Stark
   M.S., University of Florida, August 1994.
   "Fluctuation effects in the optical conductivity of thin-film $Bi_2Sr_2CaCu_2O_8$."
   Data Engineer II at AmTrust Financial Services

9. Sungkwang Hong
   M.S. (without thesis), University of Florida, December 1998.
   Engineer, AMD, Toronto.

10. Rupal Amin
    M.S., University of Florida, December 2002.
    With David Reitze.
    "A technique for passively compensating thermally induced modal distortions in Faraday isolators for gravitational wave detector input optics."
    Research Associate, Center for Advanced Microstructures & Devices, LSU.

Masters students, continued:

11. Minghan Chen
    M.S. (without thesis), University of Florida, December 2002.
    Principal scientist at Johnson & Johnson Vision Care, Jacksonville.
12. Jason Todd DeRoche
    M.S. (without thesis), University of Florida, May 2003.
    High school physics teacher, Sanford, FL.
13. Daniel Arenas
    M.S. (without thesis), University of Florida, December 2005.
    Student, University of Pennsylvania Perelman School of Medicine.
14. Wan Wu
    M.S. (without thesis), University of Florida, December 2005.
    Scientist, Scientific Systems and Applications, NASA Langley.
15. Nathan Heston
    M.S. (without thesis), University of Florida, December 2006.
    Instructor, California Polytechnic University.
16. Xiaoxiang Xi
    M.S. (without thesis), University of Florida, May 2009.
    Assistant Professor, Nanjing University.
17. Jeffrey Hoskins
    M.S. (without thesis), University of Florida, December 2009.
    Scientist and Software Engineer, Photon-X.
18. Zahra Nasrollahi
    M.S. (without thesis), University of Florida, December 2009.
    Instructor, New Mexico State University.
19. Richard Ottens
    M.S. (without thesis), University of Florida, December 2009.
    Cryogenic Engineer, NASA Goddard Spaceflight Center.

Undergraduate research students:

1. Kevin David Cummings
   B.S. with Honors, Ohio State University, June 1977.
   "Temperature dependent studies of the complex dielectric function of potassium dihydrogen phosphate (KDP) with an asymmetric Michelson interferometer."
   Manager, KLA-Tencor, Milpitas, CA.
2. Ronald Smith
   B.S. with Honors, Ohio State University, June 1978.
   "A study of the optical properties of rough sodium chloride surfaces in the far infrared."
   Graduate studies at UCLA.

Undergraduate research students, continued:

3. Catherine A. Coder
   B.S. with Honors, University of Florida, May 1985.
   "Optical properties of random metal-insulator composites near the percolation threshold."
   Engineer, Harris Semiconductor.
4. Jonathan Wrubel
   B.S. with Highest Honors, University of Florida, May 1998.
   "Apparatus for infrared measurements at the NHMFL."
   Associate Professor, Creighton University.
5. Rana Adhikari
   B.S., University of Florida, May 1998.
   With David Reitze.
   Professor, California Institute of Technology.
6. David Guigliardo
   B.S., University of Florida, May 2001.
   With David Reitze.
   Graduate studies at San Diego State University.
7. Sarah Hurst
   B.S., University of Florida, May 2002.
   Assistant Director, International Institute for Nanotechnology (IIN), Northwestern University.
8. Ramsey Guy Lundock
   B.S., University of Florida, December 2002.
   With David Reitze.
   Public Relations Center, National Astronomical Observatory of Japan.
9. Boris Glebov
   2000–2001.
   Detector characterization engineer, ASRC Federal
10. Joe Gleason
    2001–2006.
    With David Reitze.
    Engineer, University of Florida.
11. Layla Goli Booshehri
    B.S., University of Florida, May 2006.
    2004–2007.
    Research Associate, School of Public Policy, University of Maryland.
12. Amruta J. Deshpande
    B.S., University of Florida, May 2007.
    2004–2007.
    Researcher at Graphika Inc.

Undergraduate research students, continued:

13. Cameron Thacker
    2006–2007.
    Lead Data Scientist, Stealth Mode Startup Company.
14. Mitchell Lerner
    B.S. with Honors, University of Florida, May 2008.
    "Effect of Surface Treatment on Metallic Photon-Emitting Arrays."
    Operations Manager, Intel Corporation, Hillsboro, OR.
15. Ryan Honeyager
    B.S., University of Florida, May 2010.
    Graduate student, FSU Department of Earth, Ocean and Atmospheric Science.
16. Premsai Sainathan
    B.S., Mechanical Engineering, University of Florida, May 2010.
    With David Reitze and Guido Mueller
    2008–2010.
17. David Goffredo
    B.S., University of Florida, May 2011.
    Financial Software Developer at Bloomberg, New York.
18. Kane Scipioni
    With David Reitze and Guido Mueller
    Software Developer, Bank of America, Dallas/Fort Worth.
19. Joshua D. Leonard
    2010–2011.
20. Eric B. Deleeuw
    With David Reitze and Guido Mueller.
    Graduate Student, Michigan State University
21. Alexander A. Chisholm
    Web Developer, Tech Guys Who Get Marketing, Philadelphia, PA.
22. Neil Glikin
    PhD Student at University of California, Berkeley.
23. David Brown
    PhD Student in Materials Science, University of Florida.
24. Kaleb Hatfield
    Nuclear Engineer, TAE Technologies, Foothill Ranch, CA.
25. Carlos Muniz
    With Neil Sullivan.
    PhD studies, Rutgers University Computer Science Department.
26. Luis Ortega
    With Guido Mueller.
    PhD Student, University of Florida.

Undergraduate research students, continued:

27. Edward D. Ramirez
    2014–2017.
    PhD Student, Rutgers University.
28. Matthew Quinn
    2016.
29. Andy Tanjaroon Ly
    2017–2019.
    PhD Student, University of Tennessee.
30. Daniel Ally
    2018–2019.
    PhD Student, University of Tennessee.
31. Scott Aronson
    2017–2020.
    B.S. with Highest Honors, University of Florida, May 2020.
    PhD Student, Louisiana State University.
32. Jenny Solomon
    2018–2020.
    PhD Student, University of North Carolina.
33. Alexander Schindler-Tyka
    2018–2020.
34. George Francis Cameron
    2020.
35. Mitchell Solano
    2022-2023
    Graduate Student, Florida
36. Sean Saliga
    2022-present

Current:

37. Thomas Caligiure
    2022-present
38. Marcus Mynatt
    2022-present
39. Gabriele Di Gianluca
    2023-present

Postdoctoral associates, scientists, and visitors:

1. Dianne M. Grannan
   July 1978–June 1980.
   With Jim Garland.
   Technical Staff, AT&T Bell Laboratories, Columbus.

2. Claus S. Jacobsen
   June 1980–July 1980. (NATO Fellowship)
   Faculty, Technical University of Denmark.

3. Navalgund A.H.K. Rao
   July 1980–June 1981.
   With Jim Garland.
   Scientist, Shell Oil Company, Houston.

4. Soumen Basak
   July 1981–February 1982.
   With Jim Garland.
   Postdoctoral Research Associate, Lehigh University.

5. James W. Kaufer
   November 1981–December 1982. (At Xerox WRC)
   Project Manager, Burleigh Instruments.

6. Maria Gutowska
   December 1981–December 1984.
   Scientist, Polish Academy of Sciences, Warsaw.

7. Marek Gutowski
   December 1981–December 1984.
   Scientist, Polish Academy of Sciences, Warsaw.

8. Avi Feldblum
   January 1981–June 1984. (At Xerox WRC)
   Member of Technical Staff, Bell Communications Research.

9. Amanullah Memon
   September 1983–August 1984. (Fulbright Fellowship)
   Annual visits since 1986.
   Head, Engineering Sciences and Mathematics Division, Bahrain Training Institute.

10. Ivar Hamberg
    March 1985–August 1986.
    Scientist, Erickson, AB, Stockholm.

11. Monica Lindmark-Hamberg
    March 1985–August 1986.
    With Ken Wagener.
    Owner, MI Hamberg Consulting, Stockholm.

Postdoctoral associates, scientists, and visitors, continued:

12. Shin-Il Cho
    November 1985–May 1988.
    With Neil Sullivan and Pierre Sikivie.
    Scientist, Doty Research Laboratories, Columbia, SC.

13. Simon Phillpot
    With Mike Rice.
    August 1986–April 1987. (At Xerox WRC)
    Professor, MSE, University of Florida.

14. Steven L. Herr
    October 1986–August 1989.
    Faculty, High Tech Academy, Richmond.

15. Katalin Kamarás
    February 1987–August 1989.
    6 week visits in 1994–1996, and 2000–2003.
    Research Professor, Wigner Research Centre for Physics, Budapest.

16. Surendar Jeyadev
    October 1987–January 1989.
    With Mike Rice.
    Scientist, Xerox Webster Research Center.

17. Thomas Timusk
    January 1988-June 1988. (Sabbatical visitor)
    Professor, McMaster University.

18. G. Lawrence Carr
    August 1988–May 1990.
    Scientist, Brookhaven National Laboratory.

19. Danilo B. Romero
    September 1989–August 1991.
    Scientist, NIST.

20. Vladimir Železný
    January 1990–September 1992.
    Member, Institute of Physics, CSAV, Prague.

21. Nikolai A. Golubev
    October 1992. (Exchange Visitor)
    Vice Director, New Technology Engineering Center, Institute for Nuclear Research, Moscow.

22. Axel Zibold
    October 1994–July 1997.
    Senior Director Sales & Customer Support, Carl Zeiss, Jena.

Postdoctoral associates, scientists, and visitors, continued:

23. Ki Soo Chung
    September 1996–July 1997. (Sabbatical visitor)
    Professor, Gyeongsang National University.

24. Qi-Ze Shu
    December 1996–March 1999.
    With David Reitze.
    Scientist, Lightbit Corporation, Mountain View.

25. Ricardo P.S.M. Lobo
    January 1997–August 1999.
    With Larry Carr, at the NSLS.
    CNRS Directeur de Recherche 2ème classe, ESPCI, Paris.

26. Akito Ugawa
    September 1992–December 1992. (Exchange Visitor)
    April 1997–August 2000.
    Instructor, Department of Chemistry, Yokohama University.

27. Dorothy John
    August 1997–May 1998.
    V.P., Eastern Client / Servers.

28. Sanichiro Yoshida
    May 1997–December 2000.
    With David Reitze.
    Professor, Southeastern Louisiana University.

29. Lev Gasparov
    October 1997–August 2000.
    Terry Presidential Professor, University of North Florida.

30. Haisheng Rong
    July 2000–December 2000.
    With David Reitze.
    Scientist, Intel, Newark, CA.

31. Olga Drozdova
    April 2001–April 2002.
    Scientist, Okazaki, Japan.

32. Guido Mueller
    January 1998–August 2003.
    With David Reitze.
    Professor, University of Florida.
    Director at Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Hannover.

Postdoctoral associates, scientists, and visitors, continued:

33. Nacira Tache
    September 1998–December 2003.
    Professor, Santa Fe College.

34. Liang Zhang
    December 2003–May 2004.
    With David Reitze and Guido Mueller.
    Engineer, Intel Corp, Redmond.

35. Virgina Long
    April–May 2004. (Sabbatical visitor)
    Education Management Professional, Milton, NH.

36. Rupal Amin
    January 2003–August 2004.
    With David Reitze.
    Research Associate, LSU Center for Advanced Microstructures & Devices.

37. Malik Rakhmanov
    August 2000–August 2005.
    With David Reitze.
    Associate Professor, University of Texas Rio Grande Valley.

38. Simon Stepuk
    October 2005–July 2006.
    With David Reitze.

39. Ken Yoshiki Franzen
    January 2003–August 2006.
    With David Reitze.
    Senior Scientist, TAE Technologies, Inc, Foothill Ranch, CA.

40. Rodica Martin
    November 2006–September 2014.
    With David Reitze and Guido Mueller.
    Associate Professor, Montclar State University.

41. Naveen Margankunte
    January 2008–July 2008.
    Areva Solar, Mountain View.

42. Jungseek Hwang
    August 2007–February 2009.
    Professor, Sungkyunkwan University.

43. Volker M. Quetschke
    December 2003–May 2009.
    With David Reitze and Guido Mueller.
    Professor, University of Texas Rio Grande Valley.

Postdoctoral associates, scientists, and visitors, continued:

44. Antonio Lucianetti
    December 2006–May 2009.
    With David Reitze.
    Research Program Leader, Institute of Physics ASCR, Prague.
45. Muzammil A. Arain
    October 2005–October 2010.
    With David Reitze and Guido Mueller.
    Director of AR/VR and Optics, Infineon Technologies, Munich.
46. Yiliang Bao
    Postdoc
    February 2011–May 2012.
    With Guido Mueller.
    Scientist, National Institute of Standards and Technology.
47. Catalin Martin
    August 2009–August 2013.
    Associate Professor, Ramapo College.
48. Luke Williams
    Mechanical Engineer.
    September 2002–March 2014.
    With David Reitze and Guido Mueller.
    Mechanical Engineer, Excelitas Technologies Corp.
49. David Feldbaum
    January 2009–September 2014.
    With David Reitze and Guido Mueller.
    Visiting Assistant Professor, College of the Holy Cross.
50. Miguel González
    July 2013–September 2014.
    With Neil Sullivan.
    Engineer, Saudi Aramco, Houston.
51. Matthew Heintze
    February 2010–June 2015.
    With Guido Mueller.
    Scientist, LIGO Livingston Observatory.
52. Paul Fulda
    July 2012–July 2016.
    With Guido Mueller.
    Associate Professor, University of Florida.
53. Yingying Zhang
    August 2015–August 2016. (Sabbatical Visitor)
    Lecturer, Nanjing Xiaozhuang University.

Postdoctoral associates, scientists, and visitors, continued:

54. Tomoyuki Uehara
    April 2016–April 2017. (Sabbatical Visitor)
    Professor, National Defense Academy of Japan.
55. Giacomo Ciani
    August 2009–August 2017.
    With Guido Mueller.
    Associate Professor, University of Trento.
56. Simon Barke
    December 2015–2017.
    With Guido Mueller.
    Postdoc, Florida LISA group.
57. Giuseppe Messineo
    June 2017–June 2020.
    With Guido Mueller.
    Scientist, INFN Ferrara.
58. Ryan Goetz
    January 2018–March 2022.
    With Paul Fulda.
    Scientist, Applied Research Associates, Raleigh.
59. Anna Green
    August 2018–June 2022.
    With Paul Fulda.
    Postdoc, Nikhef, Amsterdam.
60. Ayman Hallal
    April 2017–September 2022.
    With Guido Mueller.
    Postdoc, Max Planck Hannover ALPS group.

Current:

61. Joe Gleason
    Mechanical Engineer, LIGO, ADMX, ALPS, and LISA.
    June 2010–present.
    With Guido Mueller, Paul Fulda, and Neil Sullivan.
62. Alex Weaver
    Scientist, NASA LISA Telescope Project
    August 2022–present.
    With Paul Fulda and Guido Mueller.
63. Hal Hollis
    Postdoc, NASA LISA Telescope Project
    August 2022–present.
    With Paul Fulda and Guido Mueller.

Postdoctoral associates, scientists, and visitors, continued:

64. Han Chia
    Postdoc, NASA LISA Telescope Project
    August 2022–present.
    With Paul Fulda and Guido Mueller.
65. Luis Diego Bonavena
    January 2024–present.
    With Paul Fulda.