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**PROFESSIONAL APPOINTMENTS**

August 2011-Present Executive Director, LIGO Laboratory  
California Institute of Technology, Pasadena, CA

August 2003-Present Professor of Physics (on long term leave)  
The University of Florida, Gainesville, FL

August 1998-August 2003 Associate Professor of Physics  
The University of Florida, Gainesville, FL

August 1993-July 1998 Assistant Professor of Physics  
The University of Florida, Gainesville, FL

November 1992- August 1993 Physicist, Ultrashort Pulse Laser Group, L Division  
Lawrence Livermore National Laboratory, Livermore, CA

October 1990- October 1992 Postdoctoral Member of Technical Staff  
Bell Communications Research (Bellcore), Red Bank, NJ

**AFFILIATE APPOINTMENTS**

1996, 2000, 2007-2011 Visiting Associate, California Institute of Technology

2001, 2008 Maître de Recherche, Laboratoire d'Optique Appliquée, Palaiseau, France

**EDUCATION**

September 1983 **Ph. D.** in Physics  
- December 1990 The University of Texas at Austin, Austin, TX  
Thesis Advisor: Michael Downer, Professor of Physics  
Thesis Title: Femtosecond Melting Dynamics in Silicon and Carbon

September 1979 **B. A.** in Physics  
- June 1983 Northwestern University, Evanston, IL

**HONORS, AWARDS, SERVICE**

2015 Fellow, Optical Society of America (OSA)

2014-present Member, National Research Council Committee on Atomic, Molecular, and Optical Sciences (CAMOS)

2011-present Member, Indian Initiative in Gravitational-wave Observations (IndIGO) International Advisory Committee

2007-present Member, Gravitational Wave International Committee

2000-present Member, LIGO Scientific Collaboration Executive Committee

2011-2013 Member-at-Large, American Physical Society (APS) Division of Laser Science Executive Committee

2007-2011 Spokesperson, LIGO Scientific Collaboration

2006 Fellow, APS

2005-2009 Vice-Chair, Ultrafast Optical Phenomena Technical Group, Quantum Electronics Division, OSA

2005-2007 Caltech-MIT LIGO Laboratory Oversight Committee

2004-2008 Member, Science and Engineering Council, OSA

2003-2006 University of Florida Research Foundation Professor

2001-2009 Member, Advisory Committee, Australian Consortium on Interferometric Gravitational Wave Observatories

2000-2007 Chair, LIGO Scientific Collaboration Optics Working Group

2000 Distinguished Member, Society of Collegiate Scholars

1996	Cottrell Scholar, Research Corporation
1996	University of Florida Teaching Award (TIP)
1994	NSF Research Initiation Award
1991	Outstanding Dissertation Award, The University of Texas at Austin
1983	Phi Beta Kappa, Departmental Honors in Physics

Conference Program Committees/Scientific Advisory Committees: Frontiers in Optics, OSA, 2005-2013 (Technical Program Committee, Optical Sciences, 2005- 2009; Subcommittee Chair, Optical Sciences 2009; Program Chair 2011; General Chair 2013); Scientific Advisory Committee, Edoardo Amaldi Conference on Gravitational Waves, 2009 – 2013, Scientific Advisory Committee, Workshop on Gravitational Waves and High Energy Neutrinos 2009; Scientific Advisory Committee, Fujiwara Workshop: World-Wide Network for Gravitational Wave Observation, 2009; Program Committee, Physical Phenomena at High Magnetic Fields V, VI Conference, 2005-2008, Technical Program Committee, CLEO, OSA, 2005; Program Committee, APS DLS International Laser Science Conference, 1999, Co-chair, SPIE Conference: Generation, Amplification, and Measurement of Ultrashort Laser Pulses III, 1996.

### PROFESSIONAL SOCIETY MEMBERSHIPS

OSA, APS, American Astronomical Society, International Astronomical Union, American Association for the Advancement of Science, International Society on General Relativity and Gravitation

### PERSONAL DATA

Date of Birth: January 6, 1961  
 Married to Isabelle Degremont, one daughter Laura  
 Citizenship: USA  
 Languages: English, French (limited)  
 US DOE Q clearance (active)

### AREAS OF RESEARCH

Laser-based Interferometric Gravitational Wave Detection: development of new interferometer topologies for next generation gravitational wave detectors; investigations of thermal loading in passive and active optical elements; development of high power optical components; design, construction, and operation of the LIGO interferometers.

Ultrafast Optics and Spectroscopy: development of ultrafast pulse shaping techniques and chirped pulse amplifiers with application to quantum optimal control; investigations of adaptive control techniques in laser matter interactions; ultrashort pulse nonlinear effects in optical fibers; far infrared time-resolved spectroscopy of condensed matter systems.

### STUDENTS AND POSTDOCTORAL SCHOLARS SUPERVISED

Former Students (10 Ph.D., 1 MS): Katherine Dooley, Ph. D. September 2011 (Postdoctoral Assoc., Caltech, Pasadena, CA); Jinho Lee, Ph. D. May 2009 (Scientist, Samsung Corporation, South Korea); Xiaoming Wang, Ph. D. May 2008 (Research Scientist, Physics Department, Univ. of Texas at Austin); Wan Wu,\* Ph. D. August 2007 (Electro-Optical Systems Engineer, Science Systems and Applications, Inc., Hampton, VA); Vidya Ramanathan, Ph. D. Dec. 2006 (Scientist, KLA-Tencor); Rachel Cruz,\*\* Ph. D. May 2006 (Lecturer, Univ. of North Florida, Jacksonville, FL); Shengbo Xu, Ph. D. May 2006 (Research Scientist, Intel, Santa Clara CA); Mark David Moores, Ph. D. March 2001 (Optical Physicist, The *In Situ* Group, Bingen, WA); Thomas Delker, Ph. D. February 2001 (Optical Physicist, Ball Aerospace and Technologies Corporation, Boulder, CO); Anatoly Efimov, Ph. D. November 2000 (Staff Scientist, Los Alamos National Laboratory, Los Alamos, NM); Kirk Hunter, M.S. May 2000 (Major, US Army)

\*co-supervisor with David Tanner

\*\*co-supervisor with Guido Mueller

Former Postdoctoral Scholars and Research Scientists (16 total): Qize Shu (Optical Scientist, LightConnect, Newark, CA); Sanichiro Yoshida (Assoc. Professor, Physics Department, Southeastern Louisiana Univ., Hammond, LA); Haisheng Rong (Research Scientist, Intel Corporation, Santa Clara, CA); Guido Mueller (Professor of Physics, Univ. of Florida, Gainesville, FL); Liang Zhang (Optical Engineer, Intel Corporation, Phoenix, AR); Rupal Amin (Research Assoc., Center for Advanced Microstructures and Devices, Louisiana State Univ.); Ken Franzen (Staff Physicist, Lawrence Berkeley National Laboratory, Berkeley, CA); Malik Rakhmanov (Associate Professor, Physics Department, Univ. of Texas Brownsville); Young-Dahl Jho (Assistant Professor, Guangzhu Institute of Science and Technology (GIST), Guangzhu, South Korea); Antonio Lucianetti (Research Scientist, LULI, Ecole Polytechnique, Palaiseau, France); Volker Quetschke (Assist. Professor, Physics Department, Univ. of Texas Brownsville); Muzammil Arain (Staff Scientist, KLA-Tencor, San Jose, CA); Rodica Martin (Postdoctoral Scholar, Univ. of Florida); David Feldbaum (Research Scientist, Univ. of Florida); Matthew Heintze (Postdoctoral Scholar, Univ. of

Florida); Giacomo Ciani (Postdoctoral Scholar, Univ. of Florida)

## REFERENCES

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Professor Michael C. Downer  
Distinguished Service Professor of Physics  
The University of Texas at Austin  
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(Postdoctoral Supervisor)

## DAVID REITZE - PATENTS

- [1] "Method and Apparatus for Modulating Light", Volker Quetschke, Wan Wu, Luke Williams, Muzammil A. Arain, Rodica Martin, David H. Reitze, David B. Tanner, Guido Mueller, US Patents 8,279,511, 8,446,657.

## DAVID REITZE - BOOKS, TECHNICAL PUBLICATIONS AND CONFERENCE PRESENTATIONS

### EDITED CONFERENCE PROCEEDINGS

- [1] *Generation, Amplification, and Measurement of Ultrashort Laser Pulses III*, SPIE Proceedings V. 2473, W. E. White and D. H. Reitze, eds. (SPIE, Bellingham, 1996).

### PUBLICATIONS – REFEREED ARCHIVAL JOURNALS

- [1] D. H. Reitze, X. Wang, H. Ahn, and M. C. Downer, "Femtosecond Laser Melting of Graphite", *Phys. Rev. B* **40**, 11986-11989 (1989).
- [2] D. H. Reitze, T. R. Zhang, Wm. M. Wood, and M. C. Downer, "Two-Photon Spectroscopy of Silicon Using Femtosecond Pulses at Above Gap Frequencies", *J. Opt. Soc. Am. B* **7**, 84-89 (1990).
- [3] K. Siebert, G. C. Cho, W. Kutt, H. Kurz, D. H. Reitze, J. Dadap, H. Ahn, M. C. Downer, and A. M. Malvezzi, "Femtosecond Carrier Dynamics in Graphite", *Phys. Rev. B* **42**, 2842-2851 (1990).
- [4] J. I. Dadap, G. B. Focht, D. H. Reitze, and M. C. Downer, "Two-photon Absorption in Diamond and Its Application to Ultraviolet Femtosecond Pulsewidth Measurements", *Op. Lett.* **16**, 499-501 (1991).
- [5] D. H. Reitze, A. M. Weiner, and D. E. Leaird, "High-power Femtosecond Optical Pulse Compression by Using Spatial Solitons", *Op Lett.* **16**, 1409-1411 (1991).
- [6] A. M. Weiner, D. E. Leaird, D. H. Reitze, and E. G. Paek, "Spectral Holography of Shaped Femtosecond Pulses", *Op. Lett.* **17**, 228-230 (1992).
- [7] D. H. Reitze, H. Ahn, and M. C. Downer, "Optical Properties of Liquid Carbon Probed by Femtosecond Spectroscopy", *Phys. Rev. B* **45**, 2677-2693 (1992).
- [8] D. H. Reitze, A. M. Weiner, and D. E. Leaird, "Shaping of Wide Bandwidth, 20 fs Optical Pulses", *App. Phys. Lett.* **61**, 1260-1262 (1992).
- [9] A. M. Weiner, D. E. Leaird, D. H. Reitze, and E. G. Paek, "Femtosecond Spectral Holography", *IEEE J. Quantum Electron.* **28**, 2251-2261 (1992). (INVITED)
- [10] D. H. Reitze, A. M. Weiner, A. Inam, and S. E. Etamad, "Fermi Level Dependence of the Femtosecond Response in High- $T_C$  Superconductors", *Phys. Rev. B* **46**, 14309-14312 (1992).
- [11] A. M. Weiner, S. Oudin, D. E. Leaird, and D. H. Reitze, "Shaping of Femtosecond Pulses Using Phase-only Filtering Designed by Simulated Annealing", *J. Opt. Soc. Am. A* **10**, 1112-1120 (1993).
- [12] D. H. Reitze, E. Haton, R. Ramesh, S. Etamad, and W. K. Chan, D. E. Leaird, T. Sands, Z. Karim and A. Tanguay, "Electrical and Electro-optic Properties of Single Crystalline, Epitaxial Thin Films Grown on Silicon Substrates," *Appl. Phys. Lett.* **63**, 596-598 (1993).
- [13] M. C. Downer, H. Ahn, D. H. Reitze, and X. Y. Wang, "Dielectric Function and Electrical Resistivity of Liquid Carbon Determined by Femtosecond Spectroscopy," *Inter. Journal of Thermophysics* **14**, 361-370 (1993). (INVITED)
- [14] A. E. Efimov, C. Schaffer, and D. H. Reitze, "Programmable Shaping of Ultrabroad Bandwidth Pulses from a Ti:Sapphire Laser", *J. Opt. Soc. Am.* **B12**, 1968-1980 (1995).

- [15] D. E. Brooks, M. D. Moores, D. H. Reitze, W. W. Dawson, and A. Sergeev, " Variance in Measurements of Retinal Nerve Fiber Layer Thickness Using Optical Coherence Tomography Due To Arbitrary Assignment of Reflectivity Threshold Levels", *Invest. Ophthalmol. & Visual Science* **37**(3), 5038-5038 (1996).
- [16] W. W. Dawson, M. D. Moores, D. H. Reitze, D. E. Brooks, A. Sergeev, and K. Gelatt, "Comparison of Optical Coherence Tomography and Histology at the Neural Rim", *Invest. Ophthalmol. & Visual Science* **37**(3), 5259-5259 (1996).
- [17] J. L. Krause, D. H. Reitze, G. D. Sanders, A. V. Kuznetsov, and C. J. Stanton, "Quantum Control in Quantum Wells" *Phys. Rev. B* **57** 9024-9034 (1998).
- [18] S. N. Roper, M. D. Moores, G. V. Gelikonov, F. I. Feldchtein, N. M. Beach, M. A. King, V. M. Gelikonov, A. M. Sergeev, and D. H. Reitze, "In Vivo Detection of Cortical Dysplasia Using Optical Coherence Tomography", *J. Neurosci. Meth.* **80**, 91-98 (1998).
- [19] A. Efimov and D. H. Reitze, " Simultaneous Phase Compensation And Pulse Shaping In A 26 Fs Chirped Pulse Amplifier", *Opt. Lett.* **23**, 1612-1614 (1998).
- [20] F.I.Feldchtein, G.V.Gelikonov, V.M.Gelikonov, R.R.Iksanov, R.V.Kuranov, A.M.Sergeev, N.D.Gladkova, M.N.Ourutina, J.A.Warren, Jr., and D. H. Reitze, " In vivo OCT Imaging of Hard and Soft Tissue of the Oral Cavity", *Opt. Express* **3**, 239-250 (1998).
- [21] A. Efimov, M. D. Moores, N. M. Beach, J. L. Krause, and D. H. Reitze "Adaptive Control of Pulse Phase In A Chirped Pulse Amplifier", *Opt. Lett.* **23**, 1915-1917 (1998).
- [22] R. P. S. M. Lobo, G. L. Carr, J. LaVeigne, D. H. Reitze, and D. B. Tanner, "Far and Mid-infrared Spectroscopy in the New U12IR Beamline at the National Synchrotron Light Source", *Rev. Sci. Instrum.* **70**, 2899-2904 (1999).
- [23] Efim Khazanov, Oleg Kulagin, Sanichiro Yoshida, David B. Tanner, and David H. Reitze, " Investigation of Self- Induced Depolarization of Laser Radiation in Terbium Gallium Garnet, *IEEE J. Quantum Elec.* **35**, 1116-1122 (1999).
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- [25] E. Khazanov, N. Andreev, A. Babin, A. Kiselev, O. Palashov, and D. H. Reitze, "Suppression of Self-Induced Depolarization of High-Power Laser Radiation in Glass-Based Faraday Isolators, *J. Opt. Soc. Am B.* **17**, 99-102 (2000).
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- [28] W. W. Hauswirth, Q. Li, K. Hunter, C. Gonzalez-Pola, A. S. Lewin, and D. H. Reitze, "Non-invasive Imaging by Optical Coherence Tomography (OCT) to Monitor Induced Retinal Degeneration in the Mouse", *Invest. Ophthal. Vis. Science* **41**, 44 (2000).
- [29] G.L. Carr, R.P.S.M. Lobo, J. LaVeigne, D.H. Reitze, D.B. Tanner "Exploring the Dynamics of Superconductors by Time-Resolved Far-Infrared Spectroscopy" *Phys. Rev. Lett.* **85**, 3001-3004 (2000).
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- [31] Justin D. Mansell, Joseph Hennawi, Eric Gustafson, Martin Fejer, Robert L. Byer, David Clubley, S. Yoshida, and D. H. Reitze, "Evaluating the Effect of Transmissive Optic Thermal Lensing on Laser Beam Quality Using a Shack-Hartmann Wavefront Sensor", *Appl. Opt.* **40**, 366-374 (2001).
- [32] Fiorenzo G. Omenetto, Antoinette J. Taylor, Mark D. Moores, and D. H. Reitze, "Adaptive Control of Nonlinear Femtosecond Pulse Propagation in Optical Fibers", *Opt. Lett.* **26**, 938-940 (2001).
- [33] Q. Li, A. M. Timmers, K. Hunter, C. Gonzalez-Pola, A. S. Lewin, J. Lem, D. H. Reitze, W. W. Hauswirth, "Non-Invasive Imaging by Optical Coherence Tomography (OCT) Monitor Retinal Degeneration in the Mouse", *Invest. Ophthal. Vis. Science* **42**, 2981-2989 (2001).
- [34] W. Dawson, T. Nakanishi-Ueda, D. Armstrong, D. H. Reitze, D. Samuelson, M. Hope, S. Fukuda, M. Matsuishi, T. Ozawa, T. Ueda, and R. Koide "Local Fundus Response to Blue (LED and Laser) and Infrared (LED and Laser) Sources", *Exp. Eye Res.* **73**, 137-147 (2001).
- [35] A. M. Sergeev, L. Dolin, and D. H. Reitze, "Optical Tomography of Biotissues: Past, Present, and Future, Optics and Photonics News, July 2001, 28-35. (INVITED)
- [36] R. P. S. M. Lobo, G. L. Carr, J. LaVeigne, D. H. Reitze, and D. B. Tanner, "Subnanosecond Time-Resolved Broad Band Infrared Spectroscopy Using Synchrotron Radiation", *Rev. Sci. Instr.* **73**, 1-10 (2002).
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- [38] Efim A. Khazanov, Nikolay N. Andreev, Oleg V. Palashov, Oliver Mehl, and D. H. Reitze, "Effect of TGG Crystal Orientation on the Isolation Ratio of the Faraday Isolator at a High Average Power", *Appl. Opt.* **41**, 483-492 (2002).
- [39] G. Mueller, R. Amin, D. Guagliardo, Donovan McFeron, R. Lundock, D. H. Reitze, and D. B. Tanner, "Method for Compensation of Thermally-Induced Modal Distortions in the Input Optics Components of Gravitational Wave Interferometers", *Class. Quantum Grav.* **19** 1793-1801 (2002).
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- [41] Fiorenzo G. Omenetto, D. H. Reitze, Mark D. Moores, Antoinette J. Taylor, and B. P. Luce, "Ultrafast Adaptive Control Methods for Propagation in Optical Fibers", *IEEE J. Selected Topics in Quantum Electron.* **8**, 690-698 (2002). (INVITED)
- [42] A. Rundquist, A. Efimov, and D. H. Reitze, "Rapid Mask Synthesis Using the Gerchberg-Saxton Algorithm for Femtosecond Pulse Shaping" *J. Opt. Soc. B***19**, 2468-2478 (2002).
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- [44] G. Mueller, T. Delker, D. B. Tanner, and D. H. Reitze, "Dual Recycled Cavity-enhanced Michelson Interferometer for Gravitational Wave Detection", *Appl. Opt.* **42**, 1257-1268 (2003).
- [45] K. Strain, G. Mueller, D. B. Tanner, T. Delker, D. H. Reitze, J. Mason, P. Willems, D. Shaddock, and D. McClelland, "Sensing and Control in Dual Recycling Laser Interferometer Gravitational Wave Detectors", *Appl. Opt.* **42**, 1244-1256 (2003).
- [46] S. Yoshida, D. H. Reitze, D. B. Tanner and J. Mansell, "Method for Measuring Very Small Optical Absorption Coefficients Using a Shack-Hartmann Wavefront Detector", *Appl. Opt.* **42**, 1257-1268 (2003).
- [47] D. H. Reitze, S. Kazamias, F. Weihe, G. Mullet, D. Douillet, F. Augé, O. Albert, V. Ramanathan, J. P. Chambaret, D. Hulin, and P. Balcou, "Enhancement of High Order Harmonic Generation at Tuned Wavelengths Via Adaptive Control", *Opt. Lett.* **29**, 86-88 (2004).

- [48] R. Abbott, et al. (LIGO Scientific Collaboration), “Detector Description and Performance for the First Coincidence Observations between LIGO and GEO”, *Nuc. Instr. Meth. A* **517**, 154-179 (2004).
- [49] Stacy Wise, G. Mueller, D. H. Reitze, and D. B. Tanner, “Linewidth Broadened "White Light" Fabry-Perot Cavities within Gravitational Wave Detectors” *Class. Quantum Grav.* **21**, S1031-S1036 (2004).
- [50] B. Woan, et al., “Upper Limits on the Strength of Periodic Gravitational Waves from PSR J1939-2134”, *Class. Quantum Grav.* **21**, S671-S676 (2004).
- [51] F.V. Kyrychenko, Y.D. Jho, J. Kono, S.A Crooker, G.D. Sanders, D.H Reitze C.J. Stanton, X. Wei, C. Kadow, and A.C. Gossard, “Interband Magnetoabsorption Study of the Shift of the Fermi Energy of a 2DEG with an In-plane Magnetic Field”, *Physica E* **22**, 624-627 (2004).
- [52] R. Abbott, et al. (LIGO Scientific Collaboration), “Setting Upper Limits on the Strength of Periodic Gravitational Waves from PSR J1939-2134 Using the First Science Data from the GEO600 And LIGO Detectors”, *Phys. Rev. D***69**, 082004 (2004).
- [53] R. Abbott, et al. (LIGO Scientific Collaboration), “First upper limits on gravitational wave bursts from LIGO”, *Phys. Rev. D***69**, 102001 (2004).
- [54] R. Abbott, et al. (LIGO Scientific Collaboration), “Analysis of LIGO Data for Gravitational Waves from Binary Neutron Stars”, *Phys. Rev. D***69**, 122001 (2004).
- [55] R. Abbott, et al. (LIGO Scientific Collaboration), “Analysis of First LIGO Science Data for Stochastic Gravitational Waves”, *Phys. Rev. D***69**, 122004 (2004).
- [56] E. Khazanov, N. Andreev, A. Mal’shakov, O. Palashov, A. Poteomkin, A. M. Sergeev, A. Shaykin, V. Zelenogorsky, Igor Ivanov, Rupal Amin, Guido Mueller, D. B. Tanner, and D. H. Reitze, “Compensation of Thermally Induced Modal Distortions in Faraday Isolators”, *IEEE J. Quant. Electron.* **40**, 1500-1510 (2004).
- [57] Shengbo Xu, D. H. Reitze, and R. L. Windeler, “Controlling Nonlinear Processes in Microstructured Fibers Using Shaped Pulses”, *Opt. Express* **12**, 4731-4741 (2004).
- [58] Y. D. Jho, S. A. Crooker, X. Wang, X. Wei, F. V. Kyrychenko, J. Kono, C. J. Stanton, C. Kadow, A. C. Gossard, and D. H. Reitze, “Many-body Interaction in the Fermi Energy of a High-density Two-dimensional Electron Gas”, *Int. J. Mod. Phys. B* **18** 3775-3780 (2004).
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- [61] P. Barriga, et al., (ACIGA Collaboration), “Technology Developments for ACIGA High Power Test Facility for Advanced Interferometry”, *Class. Quantum Grav.* **22**, S199-S208 (2005).
- [62] O. Boyko, T. A. Planchon, C. Valentin, D. Douillet, D. Reitze, S. Kazamias, S. Sebban, P. Balcou, “Spectral Tailoring of High Harmonic Generation by Adaptive Methods”, *Laser Physics* **15**, 616-619 (2005).
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- [66] B. Abbott, et al. (LIGO Scientific Collaboration), “A Search for Gravitational Waves Associated with the Gamma Ray Burst GRB030329 Using the LIGO Detectors”, *Phys. Rev. D* **72**, 042002 (2005).
- [67] O. Boyko, T. A. Planchon, C. Valentin, D. Douillet, D. Reitze, S. Kazamias, S. Sebban, P. Balcou, “Optimisation of the Generation of Elevated-Order Harmonics with the Help of an Adaptive Optics And An Acousto-Optic Modulator”, *J. Physique IV* **127**, 99-103 (2005).
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