

Victor V. Albert

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INTERESTS

Nanoscience: fullerenes, nanotubes, nanocrystals

Applied mathematics: theoretical physics, fluid dynamics, mathematical physics

EDUCATION

B. S. Physics, University of Florida, 2010 (Expected)

International Baccalaureate Program, Palm Harbor University High School, 2006, *Valedictorian*

EXPERIENCE

Los Alamos National Laboratory

Research Assistant: Electronic Structure
Sergei Tretiak and Svetlana V. Kilina

Summer 2008

Center for Nonlinear Studies

Analyzed electronic structure and excitations of CdSe quantum nanocrystals and Ruthenium bipyridine complexes. Determined bonding structure and patterns of various compounds to quantum dots. Investigated impact of dielectric continua on absorption on Ruthenium complexes.

University of Florida

Research Assistant: Molecular Dynamics
John R. Sabin and Frank E. Harris

Fall 2006 – Present

Quantum Theory Project

Performed simulations of collisions between fullerene complexes and layers of graphene and graphite. Analyzed penetration (window) mechanism of endohedral atom in C₆₀. Performed endohedral fullerene collisional fragmentation simulations. Modeled fullerene structure and energetics implementing a molecular dynamics algorithm.

PUBLICATIONS

Refereed Journals

Victor V. Albert, John R. Sabin, and Frank E. Harris, *Simulations of Xe@C₆₀ Collisions with Graphitic Films*, Int. J. Quantum. Chem. (accepted)

Victor V. Albert, John R. Sabin, and Frank E. Harris, *Simulated Structure and Energetics of Endohedral Complexes of Noble Gas Atoms in Buckminsterfullerene*, Int. J. Quantum. Chem. **107**, 3061 (2007).

Online Journals

Victor V. Albert, *Fragmentation of Endohedral Fullerenes*, University of Florida Journal of Undergraduate Research, (submitted)

TALKS

Conferences and Symposia

Electronic Structure of CdSe Nanocrystals and Ru Complexes, [Victor V. Albert](#); Annual Student Symposium, Los Alamos National Laboratory, New Mexico; August 2008.

Surface-Impact Studies of Endohedral Fullerene Complexes on Graphite, Victor V. Albert, John R. Sabin, Frank E. Harris; Southeast Regional Honors Conference, Birmingham, Alabama; May 2008.

Buckyballs and Graphite: Clash of the Carbons, Victor V. Albert, John R. Sabin, Frank E. Harris; University of Florida Undergraduate Research Symposium, Gainesville, Florida; February 2008.

Seminars and Formal Meetings

Electronic Structure of CdSe Nanocrystals and Ru Complexes, Victor V. Albert; Center for Nonlinear Studies Student Seminar, Los Alamos National Laboratory, New Mexico; August 2008.

Surface-Impact Studies of Xe@C₆₀ and Graphite, Victor V. Albert, John R. Sabin, Frank E. Harris; Center for Nonlinear Studies Tretiak Group Meeting, Los Alamos National Laboratory, New Mexico; July 2008.

Contributed Presentations

Surface-impact Collisions of Endohedrally Complexed Fullerenes, Victor V. Albert, John R. Sabin, Frank E. Harris; 27th Brandt-Ritchie Workshop on Particle Penetration Phenomena and Excitation of Solids, Playa del Carmen, Mexico; December 2007.

POSTERS

Surface-Impact Studies of Endohedral Fullerene Complexes and Graphite, Victor V. Albert, John R. Sabin, Frank E. Harris; 48th Sanibel Symposium on Atomic, Molecular, Bio-physical, and Condensed Matter Theory, St. Simon's Island, Georgia; February 2008.

Fragmentation of Endohedral Fullerenes, Victor V. Albert, John R. Sabin, Frank E. Harris; Excited State Processes in Electronic and Bio-nanomaterials Conference, Los Alamos National Laboratory, New Mexico; October 2007.

Structure and Energetics of Buckminsterfullerene, Victor V. Albert, John R. Sabin, Frank E. Harris; 47th Sanibel Symposium on Atomic, Molecular, Bio-physical, and Condensed Matter Theory, St. Simon's Island, Georgia; February 2007.

Energetics of Ar@C₆₀, Victor V. Albert, John R. Sabin, Frank E. Harris; University of Florida Undergraduate Research Symposium, Gainesville, Florida; February 2007.

Contributed Posters

Fragmentation of Fullerene Endoatoms on Collision with Graphene Walls, John R. Sabin, Victor V. Albert, Frank E. Harris; The Seventh International Symposium on Swift Heavy Ions in Matter, Lyon, France; June 2008.

On the Structure of X@C₆₀, John R. Sabin, Victor V. Albert, Frank E. Harris; Danish Chemical Society Annual Meeting, Odense, Denmark; June 2007.

AWARDS

Undergraduate

Goldwater Scholarship (sophomore), Barry M. Goldwater Foundation

Charles Vincent and Heidi McLaughlin Scholarship, University of Florida

Emerging Scholar, Phi Kappa Phi

University Scholar, University of Florida: research stipend and research credit for summer 2007

Wentworth Travel Scholarship, UF Honors Program

High School

National Merit Scholar, National Merit Corporation
National Advanced Placement Scholar, The College Board
Florida Bright Futures Academic Scholar
Who's Who Among America's High Schools

LANGUAGES AND PROGRAMS

Russian (native), English, Spanish
Java, Fortran, Tcl, Perl, L^AT_EX
Mathematica, Maple, Gaussian, HyperChem, VASP

COURSEWORK (GPA = 3.97)

Physics: Quantum Mechanics I, Mathematical Methods for Physicists, Enriched Modern Physics, Thermodynamics, Electromagnetism I & II
Math: Differential Equations I & II, Partial Differential Equations, Complex Analysis, Computational Linear Algebra

SERVICE

Undergraduate Physics Newsletter staff writer, 2008
48th Sanibel Symposium staff, 2008
Undergraduate Research Symposium volunteer, 2008
Lincoln Middle School Science Fair judge, 2007

ORGANIZATIONS

Phi Eta Sigma
American Physical Society
Society of Physics Students
National Society of Collegiate Scholars
Golden Key International Honor Society
Russian Heritage Society, St. Petersburg, Florida

REFERENCES

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Sergei Tretiak
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