

**RESUME**  
**(v.5)**  
**(January 5, 2021)**

**Dr. Orion Ciftja**

Department of Physics, Prairie View A&M University, Prairie View, TX 77446, USA

Tel: 1-(936)-261-3137, Fax: 1-(936)-261-3149, E-mail: [ogciftja@pvamu.edu](mailto:ogciftja@pvamu.edu)

**Education**

- **Ph.D.** - International School of Advanced Studies (SISSA/ISAS), Trieste, Italy, **1997**
- **Master Phil** - International School of Advanced Studies (SISSA/ISAS), Trieste, Italy, **1995**
- **Diploma ICTP Degree** - International Centre for Theoretical Physics (ICTP), Trieste, Italy, **1994**
- **Diploma Degree** - University of Tirana, Tirana, Albania, **1991**

**Teaching Experience**

- **Full Professor**, Department of Physics, Prairie View A&M University, Prairie View, Texas 77446, USA **(2013-present)**
- **Associate Professor**, Department of Physics, Prairie View A&M University, Prairie View, Texas 77446, USA **(2008-2013)**
- **Assistant Professor**, Department of Physics, Prairie View A&M University, Prairie View, Texas 77446, USA **(2002-2008)**
- **Visiting Assistant Professor**, Department of Physics, Texas A&M University, College Station, Texas 77843, USA **(1999-2000)**
- **Assistant Professor**, Department of Physics, University of Tirana, Albania **(1991-1993)**

**Research Experience**

- **Assistant/Associate/Full Professor**, Department of Physics, Prairie View A&M University, Prairie View, Texas 77446, USA **(2002/2008/2013-present)**
- **KITP Scholar**, Kavli Institute for Theoretical Physics, University of California, Santa Barbara, California 93106, USA **(2007, 2008 and 2009)**
- **Post-Doctoral Fellow**, Department of Physics & Astronomy, University of Missouri, Columbia, Missouri 65211, USA **(2000-2002)**
- **Visiting Assistant Professor**, Department of Physics, Texas A&M University, College Station, Texas 77843, USA **(1999-2000)**
- **Post-Doctoral Fellow**, Ames Laboratory, Iowa State University, Ames, Iowa 50011, USA **(1997-1999)**
- **Guest Scientist**, International Centre for Theoretical Physics (ICTP), Trieste I-34100, Italy **(October 1, 1994-December 31, 1994)**

### Funded Projects

- Exotic Quantum Liquid Phases Due to Intrinsic Degrees of Anisotropy, **National Science Foundation (DMR-2001980)**, \$240,000, January 1, 2021- December 31, 2023 (PI)  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=2001980&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2001980&HistoricalAwards=false)
- Fostering Student Success and Diversity in STEM by Combining Scholarship Support with Mentoring and Research Engagement, **National Science Foundation (DUE-1930530)**, \$1,000,000, January 1, 2020 – December 31, 2024 (Co-PI)  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1930530&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1930530&HistoricalAwards=false)
- Breakdown of Rotational Invariance in Quantum Hall Systems with Anisotropic Interaction, **National Science Foundation (DMR-1705084)**, \$200,000, September 1, 2017 – August 31, 2020 (PI)  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1705084&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1705084&HistoricalAwards=false)
- Novel Quantum Hall Phases with Anisotropic Interaction, **Prairie View A&M University (PVAMU) Summer 2017 Research Mini-Grant Program**, \$20,000, June 1, 2017-August 31, 2017 (PI)
- RUI-Unconventional Anisotropic Order in Strongly Correlated Fermi Systems, **National Science Foundation (DMR-1410350)**, \$180,037, September 1, 2014 – August 31, 2017 (PI)  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1410350&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1410350&HistoricalAwards=false)
- New Concepts for Controlled Injection, Detection, and Manipulation of Spin in Quantum Dot Devices, **Army Research Office (W911NF-13-1-0139)**, \$401,649, May 1, 2013-April 30, 2017 (PI)
- RUI-Anisotropic Phases of Correlated Electronic Systems, **National Science Foundation (DMR-1104795)**, \$144,000, September 1, 2011 – August 31, 2015 (PI)  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1104795&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1104795&HistoricalAwards=false)
- College Readiness and Retention of Physics and Chemistry Knowledge at Prairie View A&M University, **Texas Higher Education Coordinating Board**, \$10,000, December 1, 2009 - May 31, 2011 (PI)
- RUI-Anisotropy in Correlated Electronic Systems in Quantum Hall Regime, **National Science Foundation (DMR-0804569)**, \$138,000, September 15, 2008 – August 31, 2012 (PI)  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=0804568&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=0804568&HistoricalAwards=false)
- MRI: Acquisition of a dilution refrigerator with tunnel diode system, **National Science Foundation (DMR-0619801)**, \$321,173, October 1, 2006-September 30, 2009 (Co-PI)  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=0619801&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=0619801&HistoricalAwards=false)
- IGERT: New mathematical tools for next generation materials [Leading Institution: TAMU; Participating Institutions: PVAMU and Texas State University], **National Science Foundation (Award # 0549487)**, \$2,817,299, June 1, 2006-May 31, 2013 (sub-award PI)
- Research on the actinides and related materials at extreme conditions, **Department of Energy (U.S. D.O.E. Grant No. DE-FG52-05NA27036)**, \$1,500,000, October 1, 2005-September 30, 2007 (Co-PI)
- Physics of nanotechnology at PVAMU, **Prairie View A&M University (PVAMU) Research Enhancement Program**, \$3,500, September 1, 2003- August 31, 2004 (PI)

### Recent Awards

- **Outstanding Faculty Researcher Award 2019.** First Inaugural Award by the Office of Research, Innovation, and Sponsored Programs (ORISP) and the Office of Provost and Academic Affairs at Prairie View A&M University (April 12, 2019).
- **Citation of work supported by NSF Award DMR-1410350 (PI: Orion Ciftja)** [the only NSF-RUI project cited on that document] on the Testimony of James F. Kurose, Ph.D. Assistant Director of the National Science Foundation for Computer and Information Science and Engineering before the Subcommittee on Research and Technology and the Subcommittee on Energy for the Committee on Science, Space, and Technology. **U.S. House of Representatives, Washington DC, October 24, 2017.**
- **Kavli Institute for Theoretical Physics (KITP), University of California – Santa Barbara Scholar Award for the period 2007-2009.** On the congratulating letter accompanying the Award Certificate [dated December 15, 2006], Dr. David Gross, Director and 2004 Nobel Prize Winner in Physics remarks: *“The selection committee was very impressed with your application and we look forward to your association with the KITP...”*
- **Recipient of the Texas A&M University System (TAMUS) Teaching Excellence Award (Spring 2011)**
- **Recipient of the Texas A&M University System (TAMUS) Teaching Excellence Award (Fall 2010)**
- **Recipient of the third Texas A&M University System (TAMUS) Teaching Excellence Award (Fall 2009).** The only faculty from the College of Arts and Sciences ranked in the Top 5% Category
- **Recipient of the second Texas A&M University System (TAMUS) Teaching Excellence Award (Spring 2009).** The only faculty from the College of Arts and Sciences ranked in the Top 5% Category
- **Recipient of the first Texas A&M University System (TAMUS) Teaching Excellence Award (Fall 2008).** The only faculty from the College of Arts and Sciences ranked in the Top 5% Category. On the congratulating letter accompanying the Award [dated February 25, 2009], Dr. Michael D. McKinney, Chancellor of the TAMUS remarks: *“On behalf of the Board of Regents of the Texas A&M University System and on behalf of our 109,000 students, thank you for doing an outstanding job of teaching”*
- **Outstanding Faculty Award for Academic Year 2007-2008,** Department of Physics, Prairie View A&M University, Prairie View, Texas
- **Prairie View A&M University (PVAMU) - Department of Physics Citation,** December 8, 2006 *“In recognition of being the most prolific publisher of scientific papers in internationally refereed journals and for his work on the newsletter preview”*

### Editorial Board Membership

- Review Editor for Condensed Matter Physics of Frontiers in Physics <https://www.frontiersin.org/journals/physics/sections/condensed-matter-physics>
- Review Editor for Computational Physics of Frontiers in Physics <https://www.frontiersin.org/journals/physics/sections/computational-physics>
- Editorial Board Member of Heliyon published by Elsevier (<https://www.heliyon.com/editorial-team/board/>)
- Editorial Board Member of Energy, Science and Technology (<http://www.cscanada.net/index.php/est/index>) published by Canadian Research & Development Center of Sciences and Cultures (<http://www.cscanada.org> ; <http://www.cscanada.net>)
- Editorial Board Member of the Journal of Nano Education (<http://www.aspbs.com/jne/>) published by American Scientific Publishers (<http://www.aspbs.com/>)

- Editorial Board Member of ISRN Condensed Matter Physics (<http://www.isrn.com/journals/cmp/>) published by International Scholarly Research Network (ISRN) (<http://www.isrn.com/>)
- Editorial Board Member of American Journal of Condensed Matter Physics (<http://journal.sapub.org/ajcmp>) published by Scientific & Academic Publishing (<http://www.sapub.org/>)
- Editorial Board Member of Studies in Nonlinear Sciences (SNS) (<http://idosi.org/sns/board.htm>) published by the International Digital Organization for Scientific Information (IDOSI)
- Editorial Board Member of Computational and Applied Mathematical Sciences (CAMS) (<http://idosi.org/cams/board.htm>) published by the International Digital Organization for Scientific Information (IDOSI)
- Editorial Board Member of International Journal of Physics (IJP) (<http://idosi.org/ijp/board.htm>) published by the International Digital Organization for Scientific Information (IDOSI)
- Editorial Board Member of Applications and Applied Mathematics: An International Journal (AAM) [ISSN: 1932-9466]

### **Service to University**

A sample of various departmental, college, university and faculty senate committees is provided below:

- Department of Physics Scholarship Committee
- Department of Physics Physical Science Curriculum Committee
- Department of Physics Seminar Coordinator
- College of Arts and Sciences Student Grievances Committee
- College of Arts and Sciences Undergraduate Medical Academy Sub-Committee
- Department of Physics Selection Committee
- University Committee on Emeritus Title appointments
- Department of Physics Representative for the College of Arts and Sciences Newsletter Committee
- University Committee on Research (UCOR)
- Department of Physics Coordinator, Student Recruitment and Retention Committee
- Department of Physics Curriculum and Assessment Committee
- Department of Physics Tenure and Promotion Committee
- Department of Physics Assessment Committee
- ABET Committee for several College of Engineering programs
- Faculty Senate Research Committee
- Faculty Senate Facilities Committee
- College of Arts and Sciences Curriculum Committee
- Etc.

### **Academic and Professional Service at State/National/International Level**

- Regular Member of the American Physical Society (APS) [<http://www.aps.org>] since May 1997
- Member of Anacapa Society which promotes, supports, trains and assists the careers of researchers in theoretical and computational physics at primarily undergraduate institutions [<http://anacapasociety.org/>] since August 2009

- Sigma Advisor of the Sigma Pi Sigma Physics Society, Chapter # 308, Prairie View A&M University, Prairie View, Texas (Zone 13) since 2007
- Society of Physics Students (SPS) Advisor, SPS Chapter # 5693, Prairie View A&M University, Prairie View, Texas (Zone 13) since 2007
- Academy Member of the Texas A&M University System's Academy for Educator Development
- Reviewer/Referee for: Physical Review Letters, Physical Review B, Physical Review E, Journal of Physics B, Journal of Physics D, Journal of Physics: Condensed Matter, Physics Letters A, Optics Communications, Physica Status Solidi (b), Modern Physics Letters B, International Journal of Modern Physics B, Superlattices and Microstructures, ACS Nano, Nanoscale, Journal of Materials Chemistry, Journal of Nano Education, AIP Advances, ISRN Condensed Matter Physics, Applied Physics Letters, Journal of Low Temperature Physics, Superlattices and Microstructures, etc.
- Panel Reviewer for National Science Foundation (NSF) [various programs]
- Vertical team member for the College Readiness Assignment Design Team for the Texas College and Career Readiness Initiative (since April 2009)
- Book Reviewer (several textbooks)
- Host/Coordinator of campus/department activities and departmental research seminars
- Member of many Departmental, College and University Committees
- Chair of several committees such as Curriculum and Instruction Committee (current), Seminar Committee (current), Recruitment and Outreach Committee (past), etc.

### **Areas of Research Interests**

- **Strongly correlated electron systems and the fractional quantum Hall effect:** The experimental realization of almost ideal two-dimensional (2D) electronic systems opened new frontiers in condensed matter physics and resulted in many discoveries such as the integer and fractional quantum Hall effect (FQHE). The FQHE represents a novel state of matter that arises from strong electronic correlations. When upper Landau levels are half filled, it was believed that a Fermi liquid-like state is stable. Recent experiments around half filling of the upper Landau levels have shown surprisingly very strong magneto-transport anisotropies below a critical temperature of about 100 mK. Rather than adopt the conventional charge density wave approach, one can view the onset of anisotropy as signature of a phase transition to an anisotropic electronic liquid crystalline state with broken rotational symmetry. Over the last few years, I have worked on the formulation of a general theory of liquid crystalline electronic systems and the understanding of the origin the anisotropy in such systems.
- **Nanoscale semiconductor quantum dots:** Quantum dots are semiconductor devices consisting of electrons confined in a small region of space, usually in two dimensions. The interplay between quantum confinement, magnetic field and charging effects manifests itself in many complex physical phenomena. Current studies have thoroughly investigated the interplay between confinement, magnetic field and electronic correlations. Less work is done to understand the impact of these factors on the spin of electrons spins which is important for the area of spintronics/quantum computing. During the last years, I have worked to understand the properties of small semiconductor quantum dots. My future interest is to study a reliable spin readout (control) mechanism in small single or laterally coupled quantum dots. Absence of such mechanism has severely slowed down progress in the field.
- **Monte Carlo algorithms for quantum many-body problems:** Monte Carlo methods for solving the many-body Schrödinger equation have been widely applied to the study of quantum systems as diverse as liquid and solid helium, electron gas and small molecules. Will the increasing availability of supercomputers, this trend will undoubtedly continue. Fundamental improvements in Monte Carlo algorithms are needed in order to significantly affect many areas of research simultaneously. I have worked to implement second and fourth order Monte Carlo simulation algorithms to study liquid and

solid He4 using the shadow wave function formalism. Results on Bose systems have been very encouraging. My near future interest is to extend such algorithms to Fermi systems.

- **Nanoscale molecular magnetism:** With the successful synthesis of a plethora of complex magnetic organic molecules, coordination chemistry has brought forth a new class of nanometer-size magnetic materials. To date, chemists have successfully synthesized magnetic molecules in which are embedded as few as two and as many as thirty interacting magnetic ions. These systems are distinctive because the magnetic interactions can be modified in a controlled way using ligand substitution, or by variation of magnetic ion species determining the magnitude of the individual spins. One can thus explore the range from (small) quantum spins to essentially large (classical) spins in a controlled manner. My work has been on modeling the spin dynamics and understanding various quantum spin effects at nanoscale.

### **Physics Courses Taught**

My teaching experience expands over more than a decade in two continents and incorporates many cultural levels and ethnic backgrounds. During the most recent period of time at Texas A&M University (TAMU) and Prairie View A&M University (PVAMU), I have taught practically all the required courses in a Physics major curriculum:

- General Physics I and II (algebra-based Physics part I and II)
- University Physics I and II (calculus-based Physics part I and II)
- Electricity & Magnetism I and II
- Analytical Mechanics I and II
- Introductory Quantum Mechanics
- General Physics Lab I and II (algebra-based Physics Lab part I and II)
- University Physics Lab I and II (calculus-based Physics Lab parts I and II).

It is my firm belief that my strength and commitment to teaching is outstanding and can withstand any test to the full satisfaction of my colleagues and superiors as well as today student's high expectations. Many colleagues have praised my academic performance, though, what I am equally proud of, is the high esteem of my students who have chosen me for the prestigious Texas A&M University System (TAMUS) Teaching Excellence awards several times over the last few years.

### **Undergraduate & Graduate Student Supervisor and Support**

I have supported more than 80 undergraduate and graduate students to conduct research work since joining PVAMU on September 2002.

### **Invited Talks and Conference Proceedings** (Since January 1, 1996)

More than 50 (fifty) invited talks/seminars/colloquiums/presentations [at Iowa State University, Harvard University, Ames Laboratory, Argonne National Laboratory, University of Notre Dame, Rice University, TAMU - College Station, UT - Dallas, University of Houston, University of Missouri - Columbia, etc]

(Full list provided upon request)

### Peer-Reviewed Proceedings Papers

**(Peer-Reviewed Proceedings Papers – Papers that are not peer-reviewed are not included!)**  
**(Since January 1, 2005)**

1. O. Ciftja, *Emergence of liquid crystalline order in the lowest Landau level of a quantum Hall system with internal anisotropy*, **AIP Adv.** **8**, **055812** (2018). <https://doi.org/10.1063/1.5004988>  
 [Conference: 62nd Annual Conference on Magnetism and Magnetic Materials (MMM) Location: Pittsburgh, PA Date: NOV 06-10, 2017]
2. O. Ciftja, *Anisotropic electronic states in the fractional quantum Hall regime*, **AIP Adv.** **7**, **055804** (2017). <http://dx.doi.org/10.1063/1.4972854>  
 [Conference: 61st Annual Conference on Magnetism and Magnetic Materials (MMM) Location: New Orleans, LA Date: OCT 31-NOV 04, 2016]
3. O. Ciftja, *Anisotropic quantum Hall liquid states with no translational invariance in the lowest Landau level*, **J. Low Temp. Phys.** **183:85-91**, (2016). DOI: <http://doi.org/10.1007/s10909-015-1468-6>  
 [Conference: International Symposium on Quantum Fluids and Solids (QFS) Location: Niagara Falls Convention Ctr, Niagara Falls, NY Date: AUG 09-15, 2015]
4. O. Ciftja, G. Paredes, and M. Griffin, *Mathematical expressions for a system of two identical uniformly charged rods*, **Phys. Scr.** **89**, **115803** (2014). doi: <http://doi.org/10.1088/0031-8949/89/11/115803>  
 [Conference: 11th International Colloquium on Atomic Spectra and Oscillator Strengths for Astrophysical and Laboratory Plasmas Location: Mons, BELGIUM Date: AUG 05-09, 2013]
5. O. Ciftja, *Coulomb self-energy of a uniformly charged three-dimensional cylinder*, **Physica B** **407**, **2803** (2012).  
 [Conference: International Workshop on Positron Studies of Defects (PSD) Location: Delft Univ Technol, Delft, NETHERLANDS Date: AUG 28-SEP 02, 2011]
6. O. Ciftja, T. Rasco, G. Vargas, and S. Dunn, *Confinement of electrons in a geometrically patterned non-circular two-dimensional semiconductor quantum dot*, **Phys. Stat. Sol. (c)** **9**, **1337** (2012).  
 [Conference: 11th International Conference on Physics of Light-Matter Coupling in Nanostructures (PLMCN) Location: Berlin, GERMANY Date: APR 04-08, 2011]
7. N. H. Hong, C.-K. Park, A. T. Raghavender, O. Ciftja, N. S. Bingham, M. H. Phan, and H. Srikanth, *Room temperature ferromagnetism in monoclinic Mn-doped ZrO<sub>2</sub> thin films*, **J. Appl. Phys.** **111**, **07C302** (2012).  
 [Conference: 56th Annual Conference on Magnetism and Magnetic Materials Location: Scottsdale, AZ Date: OCT 30-30, 2011]
8. O. Ciftja, *Anisotropy of quantum Hall phases at filling factor 9/2*, **J. Appl. Phys.** **107**, **09C504** (2010).  
 [Conference: 11th Joint MMM-Intermag Conference Location: Washington, DC Date: JAN 18-22, 2010]
9. O. Ciftja and J. Quintanilla, *Effective interaction potentials in the uppermost Landau level*, **J. Low. Temp. Phys.** **159**, **189** (2010).  
 [Conference: 9th International Conference on Research in High Magnetic Fields (RHMF 2009) Location: Dresden, GERMANY Date: JUL 22-25, 2009]
10. O. Ciftja, *Magnetic properties of small molecular clusters*, **Journal of Physics: Conference Series** **200**, **022002** (2010).  
 [Conference: International Conference on Magnetism (ICM 2009) Location: Karlsruhe, GERMANY Date: JUL 26-31, 2009]
11. O. Ciftja, *Few-electrons semiconductor quantum dots in magnetic field*, **Phys. Stat. Sol. (c)** **6**, **825** (2009).  
 [Conference: 5th International Conference on Semiconductor Quantum Dots Location: Gyeongju, SOUTH KOREA Date: MAY 11-16, 2008]



12. O. Ciftja and C. Wexler, *Anisotropy in two-dimensional electronic quantum Hall systems at half filling of valence Landau levels*, **Physica B** **403**, 1511 (2008).  
[Conference: International Conference on Strongly Correlated Electron Systems (SCES 2007)  
Location: Houston, TX Date: MAY 13-18, 2007]
13. O. Ciftja, *An experimentally justified confining potential for electrons in two-dimensional semiconductor quantum dots*, **J Computer-Aided Mater Des.** **14:37-44** (2007).  
[Conference: 1st International Conference on Synergy Between Experiment and Computation in Nanoscale Science Location: Harvard Univ, Cambridge, MA Date: MAY 31-JUN 03, 2006]
14. O. Ciftja, *Solution of the stationary Schrodinger's differential equation for a delta-split harmonic oscillator using the numerical diagonalization technique*, **Dynamics of Continuous Discrete and Impulsive Systems - Series A – Mathematical Analysis** **13: 367-376 Suppl. S, Oct (2006)**.  
[Conference: International Workshop on Differential Equations and Dynamical Systems Location: Guelph, CANADA Date: JUL 29-31, 2005]

**Contributed Talks and Conference Abstracts and Presentations**  
**(From January 1, 2015 to December 31, 2018)**

More than 100 (one hundred) contributed talks and conference abstracts and presentations. Below is a sample of contributed talks and conferences proceeding during the recent years (the asterisk indicates a student):

- P. Thomas\*, S. Rossel\*, S. Smith\*, and O. Ciftja, *Observation of Regular Energy Patterns in Finite Systems of Low-Dimensional Ionic Crystals*, APS March Meeting, Los Angeles, CA, USA March 5-9, 2018.
- O. Ciftja, ICM July 16-20, 2018
- O. Ciftja, CUWIP Conferences for Undergraduate Women in Physics, Rice University, Houston, Texas, USA, January 13-15, 2017.
- O. Ciftja, *Anisotropic magneto-resistance of a quantum Hall system with internal anisotropy*, 2017 MMM Conference, Pittsburg, PA, USA, November 6-10, 2017.
- O. Ciftja, International Conference on Strongly Coupled Coulomb Systems (SCCS 2017), Kiel, Germany, July 30-August 4, 2017.
- V. Livingston\*, E. Thomas\*, S. Saganti\*, and O. Ciftja, *Anisotropic magneto-resistance and piezoelectric effect in GaAs Hall samples*, 2016 Joint MMM-Intermag Conference, San Diego, California, USA, January 11-15, 2016.
- O. Ciftja, *Electric field controlled spin interference in a system with Rashba spin-orbit coupling*, 2016 Joint MMM-Intermag Conference, San Diego, California, USA, January 11-15, 2016.
- O. Ciftja, V. Livingston\*, E. Thomas\*, and S. Saganti\*, *Finite two-dimensional electron gas in a patterned semiconductor system*, APS March Meeting 2016, Baltimore, Maryland, USA, March 14-18, 2016.
- O. Ciftja, *Magnetoresistance Anisotropy of a Two-Dimensional Electron System on a GaAs Substrate*, 2016 MRS Conference, Phoenix, Arizona, USA, March 29 – April 1, 2016.
- O. Ciftja, *Anisotropic Electronic States In The Fractional Quantum Hall Regime*, 61<sup>st</sup> Annual Conference on Magnetism and Magnetic Materials (MMM), New Orleans, LA, USA, October 31-November 4, 2016.
- Elsa Thomas\*, Seth Saganti\* and Orion Ciftja, *Size-dependent energy of a confined system of two-dimensional electrons*, 13<sup>th</sup> TAMUS Pathways Conference, November 3-4, 2016.
- O. Ciftja, *Anisotropic quantum Hall liquid states with no translational invariance in the lowest Landau level*, 2015 International Symposium on Quantum Fluids and Solids (QFS-2015), Niagara Falls, New York, USA, August 9-15, 2015



### **Books Written and/or Edited**

- Quantum Dots: Applications, Synthesis and Characterization, Nova Science Publishers, New York (2012) [ISBN-13: 978-1-61942-968-0].
- Physics Laboratory Manual, Kendall Hunt Publishing Company [www.kendallhunt.com], Dubuque, IA (2015) [ISBN-13: 978-1-4652-6857-0]. (co-author)
- Fundamentals of Quantum Mechanics (in preparation).

### **Book Chapters**

- Nano-sized Multifunctional Materials: Synthesis, Properties and Applications Edited by Nguyen Hoa Hong. Micro & Nano Technologies Series.  
Chapter 2: Properties of Quantum Dots and their Biological Applications by O. Ciftja, Pages 21-47, Elsevier, Amsterdam, Netherlands (2019) [ISBN: 978-0-12-813934-9]
- Computational Nanophotonics Modeling and Applications.  
Chapter 1: Computational of Optical Micro-/Nanoprism by S. M. Musa and O. Ciftja, Pages 1-19, CRC Press, Taylor and Francis Group (2014) [ISBN: 978-1-4665-5876-2].
- Computational Finite Element Methods in Nanotechnology.  
Chapter 1: Overview of Computational Methods in Nanotechnology by O. Ciftja and S. M. Musa, Pages 1-17, CRC Press, Taylor and Francis Group (2013) [ISBN: 978-1-4398-9323-4].
- New Developments in Low-Energy Physics Research.  
Chapter 4: Analytic Formulas for Small Systems of Electrons at Odd Denominator Filling Factors of the Lowest Landau Level by O. Ciftja, Pages 165-182, Nova Science Publishers, New York (2013) [ISBN-13: 978-1-62257-668-5].
- Quantum Dots: Applications, Synthesis and Characterization.  
Chapter 1: Properties of Confined Small Systems of Electrons in a Parabolic Quantum Dot by O. Ciftja, Pages 1-12, Nova Science Publishers, New York (2012) [ISBN-13: 978-1-61942-968-0].
- Superconductivity and Condensed Matter Researcher Biographical Sketches and Research Summaries.  
Chapter 5, Pages 27-31, Nova Science Publishers, New York (2012) [ISBN: 978-1-61209-785-5].
- Computational Nanotechnology Modeling and Applications with MATLAB.  
Chapter 1: Introduction to Computational Methods in Nanotechnology by O. Ciftja and S. M. Musa, Pages 1-27, CRC Press, Taylor and Francis Group (2011) [ISBN: 978-1-4398-4176-1].
- Advances in Condensed Matter and Materials Research. Volume 10.  
Chapter 8: Basic Theory of Fractional Quantum Hall Effect by O. Ciftja, Pages 357-377, Nova Science Publishers, New York (2011) [ISBN: 978-1-61209-533-2].
- Quantum Dots: Research, Technology and Applications.  
Chapter 1: Few-electron semiconductor quantum dots in Magnetic Field: Theory and Methods by O. Ciftja, Pages 1-46, Nova Science Publishers, New York (2008) [ISBN: 978-1-60456-930-8]

**Selected Publications with Students**  
(Underlined and with asterisk \* denotes undergraduate student)

I have supported a large number of undergraduate and graduate students to conduct research under my supervision since joining PVAMU on September 2002.

**Shown below are only the names of those students whose research under my supervision has led to publication of peer-reviewed papers in journals with impact factors such as the ones listed in Web of Science or Scopus ( \* denotes student ):**

1. O. Ciftja and B. Johnston\*, *On a solution method for the bound energy states of a particle in a one-dimensional symmetric finite square well potential*, **Eur. J. Phys.** **40**, 045402 (2019).
2. O. Ciftja, K. Beharie\*, and T. Beharie\*, *Geometrical interpretation of the electrostatic potential created by a uniformly charged straight wire*, **Eur. J. Phys.** **40**, 015501 (2019). <https://doi.org/10.1088/1361-6404/aaf061>
3. O. Ciftja and I. Berry\*, *Interaction energy of a pair of identical coplanar uniformly charged nanodisks*, **AIP Advances** **8**, 035209 (2018). <https://doi.org/10.1063/1.5025336>
4. O. Ciftja\*, S. Rossel\*, S. Smith\*, and P. Thomas\*, *Results for the energy of a finite one-dimensional ionic crystal*, **Res. Phys.** **7**, 3696 (2017).
5. O. Ciftja, V. Livingston\*, and E. Thomas\*, *Cyclotron motion of a charged particle with anisotropic mass*, **Am. J. Phys.** **85** (5), 359 (2017).
6. O. Ciftja and D. Prenga\*, *Magnetic properties of a classical XY spin dimer in a “planar” magnetic field*, **J. Magn. Mag. Mat.** **416**, 220 (2016).
7. O. Ciftja, L. Escamilla\*, and R. Mills\*, *Shape-dependent energy of an elliptical jellium background*, **Adv. Condens. Matter Phys.** **2015**, 851356 (2015).
8. O. Ciftja, G. Paredes\*, and M. Griffin\*, *Mathematical expressions for a system of two identical uniformly charged rods*, **Phys. Scr.** **89**, 115803 (2014).
9. O. Ciftja, B. Sutton\*, and A. Way\*, *Energy in a finite two-dimensional spinless electron gas*, **AIP Advances** **3**, 052110 (2013).
10. O. Ciftja, C. Ozurumba\*, and F. Ujeyah\*, *Anisotropic quantum Hall liquids at intermediate magnetic fields*, **J. Low. Temp. Phys.** **170**, 166 (2013).
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