

# Dr. Jean Marcel Ngoko Djiokap

*Curriculum Vitae*

## CONTACT INFORMATION

---

*Address* 208 Jorgensen Hall 855 North 16th St., Lincoln, NE-68588-0299  
*Phone* (402) 472-2795 (Office 310Q), 5094 (310S), (402) 304-6457 (Mobile)  
*Email* marcelngoko@unl.edu

## EDUCATION AND PROFESSIONAL APPOINTMENTS

---

### Research Assistant Professor

2014-present

*University of Nebraska-Lincoln*

Although my full-time duties involve 100% of my time on research, I have continuously been appointed to teach both undergraduate and graduate physics courses.

- **My research activities** are focused on theoretical atomic, molecular, and optical (AMO) physics within the general areas of ultrafast, attosecond, and strong field physics.
  1. **Principal Investigator (PI) on the U.S. Department of Energy (DOE) grant**, “Dynamics of Two-Electron Atomic and Molecular Processes,” 1 August 2020 - 31 July 2022
  2. **PI on the U.S. DOE grant No. DE-FG02-96ER1464**, “Dynamics of Few-Body Atomic Processes,” 5 September 2019 - 31 August 2020
  3. **PI on the U.S. National Science Foundation (NSF) grant No. 1505492**, “Strong Field and Ultrafast Atomic and Molecular Processes,” 5 September 2019 - 31 August 2021. A 1-Year Extension Supplement Request for those disproportionately impacted by COVID-19 has been submitted, May 20 2021.
- **Research Group**
  1. One graduate student (Nathaniel Strandquist) since Summer 2020.
  2. Two postdocs (Dr. Hua-Chieh Shao and Dr. Dian Peng) from Sep. 2019 to Oct. 2020.
- **Instructor nine times for two undergraduate courses**
  1. **Phys 211 (General Physics I, the first semester introductory course for science and engineering majors, Fall 2019, Spring 2020, and Summer 2021)**: Calculus-based course intended for students in engineering and the physical sciences. Mechanics, fluids, wave motion, and heat.
  2. **Phys 212 (General Physics II, the second semester introductory course for science and engineering majors, Summer 2015, Summer 2016, Summer 2017, Summer 2018, Summer 2019, and Fall 2020)**: Continuation of PHYS 211. Electricity, magnetism, and optics.
- **Instructor twice for two graduate courses**
  1. **Phys 911 (Classical Mechanics, Fall 2018)**: Lagrangian and Hamiltonian formulations of the laws of motion; variational principles; dynamics of rigid bodies; other advanced topics.
  2. **Phys 916 (Quantum Mechanics I, Spring 2020)**: Introduction to the formalism of quantum mechanics; applications to elementary systems; angular momentum; scattering theory.
- **Remote or Hybrid Courses**: Phys 211 (Spring 2020), Phys 212 (Fall 2020), and Phys 916 (Spring 2020)
- **Substitute Instructor for one undergraduate course and two graduate courses**:

1. **Phys 115 (Descriptive Physics, Fall 2015)**: Qualitative approach to physics for the non-science major that emphasizes concepts and how they are used to understand the everyday physical world. Newton's description of motion and forces, the atomic view of matter, kinds and transformations of energy, the nature of electricity and magnetism, sound and light waves, and subatomic particles. Some topics selected according to student interest. Recommended for all students wanting a nonmathematical look at basic discoveries of physics.
2. **Phys 916 (Quantum Mechanics I, Spring 2016 and Spring 2018)**: Introduction to the formalism of quantum mechanics; applications to elementary systems; angular momentum; scattering theory.
3. **Phys 917 (Quantum Mechanics II, Fall 2016, Fall 2017 and Fall 2018)**: Hilbert-space formulation of quantum mechanics; stationary and time-dependent perturbation theory; variational methods; spin; many-particle systems and identical particles.

#### **Postdoctoral Research Associate**

2010-2014

*University of Nebraska-Lincoln*

Supervisor: Prof. Anthony F. Starace (Deceased)

My full-time duties involved 100% of my time on research, except occasionally when I was teaching undergraduate physics courses. My research activities were focused on AMO physics within the general areas of ultrafast, attosecond, and strong field physics. I was instructor twice for the undergraduate course: Phys 211 (General Physics I, the first semester introductory course for science and engineering majors, Fall 2012 and Summer 2014).

#### **Ph.D in Physics**

12/05-02/10

*Universite catholique de Louvain, Belgium*

Advisor: Prof. Bernard Piraux

Title: Electron correlations in the ionization-excitation of helium by absorption of two-photon XUV and by fast electrons impact & Effects of the electron's anomaly in relativistic laser-assisted Mott scattering

#### **M.S. in Physics**

04/02-06/03

*University of Douala, Cameroon*

Advisor: Prof. Moise G. Kwato Njock

Title: Mott's scattering in strong laser field.

#### **High-School Teacher of Physics**

2002-2005

*CES de Baboutcheu Ngaleu, Cameroon*

Full-time teacher of physics in high school. I also taught mathematics.

## **RESEARCH EXPERIENCE AND EXPERTISE**

#### **Brief Summary of Career Benchmarks**

2010-present

*University of Nebraska-Lincoln*

1. **A decade of experience in research and nine years of experience in teaching** at University of Nebraska-Lincoln (UNL).
2. Member of the American Physical Society (APS) and of the APS Topical Group on Few-Body Systems.
3. **Lead researcher of several international collaborations** involving researchers from the United States of America, Russian Federation, Denmark, Belgium, Cameroon and China.

4. First author in all (except two) published peer-reviewed journal articles. For the number of citations, see <https://scholar.google.com/citations?user=UVAuj4MAAAAJhl=en>
5. Homepage: <https://unlcms.unl.edu/cas/physics/jngokodjiokap2>
6. **Serve as Referee in fourteen peer-reviewed scientific journals in physics and chemistry:** Physical Review Letters, Physical Review A, Physical Review B, Photonics, Nature Communications, Journal of Chemical Physics, European Physical Journal D, New Journal of Physics, Journal of the Optical Society of America B, Structural Chemistry, Scientific Reports, Annals of Physics, Optics Express, and the Journal of Applied Sciences.
7. Invited Talks (10), Seminars (8), Contributed Talks (14), poster sessions (7), Workshops (5), Peer-Reviewed Publications (17).
8. **Head of the scientific committee of the International Seminar and Focus Workshop** on “Control of Ultrafast (Attosecond and Strong Field) Processes Using Structured Light,” at the Max Planck Institute for the Physics of Complex Systems, Dresden, Germany, initially scheduled from June 29 to July 17 2020. Due to COVID-19, it will now be held June 26 to July 14, 2023.
9. **Chair of the memorial focus session to honor the legacy of Anthony Starace** on “Theoretical Advances in Strong-Field and Ultrafast Physical Processes,” at the 51st Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, June 1–5, 2020; Portland, Oregon.
10. **Chair of the session M03** on “Chiral Molecules and Chiral Light,” at the 52nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Monday-Friday, May 31–June 4 2021; Virtual; Time Zone: Central Daylight Time, USA.

### Expert in Two-Electron Atomic Calculations

2010-2014

*University of Nebraska-Lincoln, Postdoctoral Research Associate, Full-time*

1. From 2010 to 2011, using MPI and Open-MP I have developed a configuration-interaction type parallel code (dubbed CODE I) capable to solve the six-dimensional TDSE for two-electron atoms (e.g., He, Be, Mg,  $H^-$ ,  $Li^-$ , etc.) exposed to a linearly-polarized laser field. To propagate the wave packet in time, I used an embedded Runge-Kutta method of order 5.
2. From 2011 to 2012, using two different methods we have developed and optimized a code (dubbed CODE II) capable to solve the TDSE for He interacting with a linearly-polarized XUV pulse. The two methods are both based on time-dependent close-coupling (TDCC) method where finite-element discrete variable representation (FE-DVR) is used for discretization of radial coordinates. The two methods differ in handling the electron-electron Coulomb repulsion term in the Hamiltonian, and also in the algorithm used to treat the temporal propagation of the wave function. While one method uses the split-operator algorithm, the second uses an effective iterative Lanczos algorithm. Using MPI, I have developed several additional parallel computer codes to extract relevant information from the two-electron wave packet (solution of the TDSE) for the ultrafast processes of single ionization of He to  $He^+(1s)$  or to  $He^+(n=2)$ , and double ionization of He. These two methods give essentially the same converged results for the two-electron wave packet, as determined by their projections onto both correlated and uncorrelated field-free two-electron states.
3. From 2013 to 2014, using high performance computing tools and facilities at Texas Advanced Computing Center (Stampede 1) and at Holland Computing Center (HCC) I have developed the first parallel computer code (dubbed CODE III) capable to solve *ab initio* the six-dimensional TDSE for He atom interacting with an intense *elliptically-polarized* XUV attosecond pulse.

### Expert in Two-Electron Molecular Calculations

2014-2019

*University of Nebraska-Lincoln, Research Assistant Professor, Full-time*

From 2014 to 2019, using high performance computing tools and facilities at Texas Advanced Computing Center (Stampede 2) and at Holland Computing Center (Crane) I have developed the first parallel computer code (dubbed CODE IV) capable to solve *ab initio* the fixed-nuclei, six-dimensional, two-electron, TDSE for the hydrogen molecule (and its isotopes) interacting with a pair of *elliptically-polarized* XUV attosecond pulses propagating either parallel or perpendicular to the molecular axis.

### **Discovery of Spiral Vortex Patterns from Interference of Electron Waves: A Dramatic Example of Wave-Particle Duality** 2015

*University of Nebraska-Lincoln, Research Assistant Professor, Full-time*

Using CODE III, we discovered spiral vortex patterns in the photoelectron momentum distribution from interference of electron wave packets following single-photon single ionization of helium by a pair of time-delayed, counter-rotating, circularly-polarized attosecond pulses. As similar vortex patterns have been produced in optics by interference of particular kinds of laser beams, this discovery is thus a dramatic example of quantum mechanical wave-particle duality. These electron vortex results provide a new diagnostic tool for characterizing the laser pulses and a new means to control the direction of the ionized electron by adjusting the time delay of the two pulses. *Our discovery of electron matter-wave vortices was published in Physical Review Letters [Phys. Rev. Lett. **115**, 113004 (2015)] and was a truly breakthrough given the great attention this work has drawn:*

- A figure in this work appears on the cover of the 09/11/2015 issue of PRL
- Our discovery was highlighted by Nature Physics
- It was selected as a research highlight by U.S. Department of Energy
- It was featured as an article in UNL newsroom
- It has stimulated numerous searches for electron vortices in other processes and targets.
- Our discovery of electron matter-wave vortex have been confirmed experimentally in 2017 and 2019 by a research group in Germany [see Pengel et al., Phys. Rev. Lett. **118**, 053003 (2017); Phys. Rev. A **96**, 043426 (2017); S. Kerbstadt et al., Nat. Comm. 10, 658 (2019).]

### **Discovery of Multistart Spiral Vortex Patterns in Multiphoton Ionization Processes** 2016

*University of Nebraska-Lincoln, Research Assistant Professor, Full-time*

See Section I on page 3 of my Research Statement.

### **Discovery of Electron Vortices in Correlated Ionization Processes** 2017

*University of Nebraska-Lincoln, Research Assistant Professor, Full-time*

See Section I on page 3 of my Research Statement.

### **Discovery of Attosecond Quantum Beats in Two-Photon Double Ionization of He via Doubly-Excited States** 2017

*University of Nebraska-Lincoln, Research Assistant Professor, Full-time*

See Section I on page 3 of my Research Statement.

### **Discovery of Dynamical Electron Vortices and Molecular Symmetry-Mixed Dichroism in Double Photoionization of H<sub>2</sub>** 2018 & 2019

*University of Nebraska-Lincoln, Research Assistant Professor, Full-time*

See Section I on pages 3 and 4 of my Research Statement.

### **Discovery of a New Type of Nonlinear Effects** 2014

*University of Nebraska-Lincoln, Research Assistant Professor, Full-time*

See Section I on pages 2 and 3 of my Research Statement.

**Discovery of Enhancement and Suppression of Asymmetry in Few-Cycle Attosecond Pulse Correlated Ionization Processes Helium** 2012 – 2013

*University of Nebraska-Lincoln, Postdoctoral Research Associate, Full-time*

See Section I on page 2 of my Research Statement.

**Discovery of the Influence of Doubly-Excited Electronic States on High-Order Harmonic Generation spectra and a New Type of Plateau** 2011, 2013 & 2020

*University of Nebraska-Lincoln, Postdoctoral Research Associate, Full-time*

See Section I on page 2 of my Research Statement.

## **PEER-REVIEWED PUBLICATIONS**

---

1. **J. M. Ngoko Djiokap**, Atomic photoionization by multiple temporal pairs of slits, Submitted to Phys. Rev. Lett. (April 21 2021), Under Review.
2. **J. M. Ngoko Djiokap**, A.V. Meremianin, and N. L. Manakov, **Electron interference in atomic ionization by two crossing polarized ultrashort pulses**, Phys. Rev. A 103, 023103 (2021).
3. **J. M. Ngoko Djiokap** and Anthony F Starace, “**Temporal coherent control of resonant two-photon double ionization of the hydrogen molecule via doubly excited states**,” Phys. Rev. A 103, 053110 (2021).
4. D. Peng, A.F. Starace, H-C. Shao, and **J.M. Ngoko Djiokap**, “**Minimizing the Duration of Isolated Attosecond Pulses**,” Phys. Rev. A 102, 063126 (2020).
5. **J. M. Ngoko Djiokap** and Anthony F Starace, “**Origin of the Multiphoton Regime Harmonic-Generation Plateau Structure**,” Phys. Rev. A 102, 013103 (2020).
6. **J. M. Ngoko Djiokap**, N. L. Manakov, A.V. Meremianin, L.B. Madsen, S.X. Hu, and Anthony F Starace, “**Molecular Symmetry-Mixed Dichroism in Double Photoionization of H<sub>2</sub>**,” Phys. Rev. Lett. **123**, 143202 (2019).
7. **J. M. Ngoko Djiokap**, N. L. Manakov, A.V. Meremianin, L.B. Madsen, S.X. Hu, and Anthony F Starace, **Dynamical Electron Vortices in Attosecond Double Ionization of H<sub>2</sub>** Phys. Rev. A **98**,063407 (2018).
8. **J. M. Ngoko Djiokap** and Anthony F Starace, **Doubly-Excited State Effects on Two-Photon Double Ionization of Helium by Time-Delayed, Oppositely Circularly-Polarized Attosecond Pulses**, J. Opt. **19**, 124003 (2017).
9. David B. Foote, Y. Lin, Liang-Wen Pi, **J. M. Ngoko Djiokap**, Anthony F Starace, and W.T. Hill, III, **Ionization enhancement and suppression by phase-locked ultrafast pulse pairs**, Phys. Rev. A **96**, 023425 (2017).
10. **J. M. Ngoko Djiokap**, S.X. Hu, L.B. Madsen, N. L. Manakov, A.V. Meremianin, and Anthony F Starace, **Kinematical vortices in double photoionization of helium by attosecond pulses**, Phys. Rev. A **96**, 013405 (2017). One of figures of this work has been selected by Phys. Rev. A for Kaleidoscope, see the web page: <https://journals.aps.org/pra/kaleidoscope/pra/96/1/013405>

11. **J. M. Ngoko Djiokap**, S.X. Hu, L.B. Madsen, N. L. Manakov, A.V. Meremianin, and Anthony F Starace, **Multistart Spiral Electron Vortices in Ionization by Circularly Polarized UV Pulses**, Phys. Rev. A **94**, 013408 (2016). One of figures of this work has been selected by Phys. Rev. A for Kaleidoscope, see the web page: <http://journals.aps.org/pra/kaleidoscope/pra/94/1/013408>
12. **J. M. Ngoko Djiokap**, S.X. Hu, L.B. Madsen, N. L. Manakov, A.V. Meremianin, and Anthony F Starace, **Electron Vortices in Photoionization by Circularly Polarized Attosecond Pulses**, Phys. Rev. Lett. **115**, 113004 (2015). A figure from this Letter is on the cover of Physical Review Letters. For the online version see the 09/11/2015 issue at <https://journals.aps.org/prl/issues/115/11>. This Letter has been highlighted by U.S. Department of Energy, see <http://science.energy.gov/bes/highlights/2016/bes-2016-09-a/>. This work has been highlighted by Nature Physics, with the article written by Editor Iulia Georgescu, for the online version see Nat. Phys. **11**, 800 (2015). This Letter has been featured in the UNL news room. Written by Scott Schrage, it may be viewed here: <http://news.unl.edu/free-tags/jean-marcel-ngoko-djiokap/>
13. **J. M. Ngoko Djiokap**, N. L. Manakov, A.V. Meremianin, S.X. Hu, L.B. Madsen, and Anthony F Starace, **Nonlinear dichroism in back-to-back double ionization of He by an intense elliptically-polarized few-cycle XUV pulse**, Phys. Rev. Lett. **113**, 223002 (2014). This Letter was featured in the February 2015 issue of Photonics Spectra (p. 32); the online version appears here: <http://www.photonics.com/Article.aspx?PID=5&VID=125&IID=801&Tag=Tech+Pulse&AID=56939>. This Letter has been featured in the UNL news room. Written by Scott Schrage, it may be viewed here: <http://news.unl.edu/newsrooms/unltoday/article/study-details-laser-pulse-impacts-on-behavior-of-electrons/>
14. **J. M. Ngoko Djiokap**, S.X. Hu, W.-C. Jiang, L.-Y. Peng, and A.F. Starace, **Asymmetries in Production of  $\text{He}^+(n = 2)$  with an Intense Few-Cycle Attosecond Pulse**, Phys. Rev. A **88**, 011401(R) (2013).
15. **J. M. Ngoko Djiokap** and A.F. Starace, **Resonant Enhancement of the Harmonic Generation Spectrum of Beryllium**, Phys. Rev. A **88**, 053412 (2013).
16. **J. M. Ngoko Djiokap**, N.L. Manakov, A.V. Meremianin, and A.F. Starace, **Carrier-Envelope-Phase-Induced Asymmetries in Double Photoionization of He by an Intense Few-Cycle XUV Pulse**, Phys. Rev. A **88**, 053411 (2013).
17. **J. M. Ngoko Djiokap**, Suxing Hu, Wei-Chao Jiang, Liang-You Peng and Anthony F Starace, **Enhanced Asymmetry in Few-Cycle Attosecond Pulse Ionization of He in the Vicinity of Autoionizing Resonances**, New J. Phys. **14**, 095010 (2012). This work was published in the Focus Issue of New Journal of Physics on "Correlation Effects in Radiation Fields," New J. Phys. **15**, 065015 (2013). The online version of this article may be viewed here: [http://iopscience.iop.org/1367-2630/15/6/065015/pdf/13672630\\_15\\_6\\_065015.pdf](http://iopscience.iop.org/1367-2630/15/6/065015/pdf/13672630_15_6_065015.pdf)
18. **J. M. Ngoko Djiokap** and Anthony F. Starace. **Evidence of the  $2s2p(^1P)$  doubly excited state in the harmonic generation spectrum of helium**, Phys. Rev. A **84**, 013404 (2011).

19. **J. M. Ngoko Djiokap**, E. Fomouuo, M. G. Kwato Njock, X. Urbain and B. Piraux. **Electron-impact ionization excitation of helium in the quasiphoton regime**, Phys. Rev. A **81**, 042712 (2010).
20. **J. M. Ngoko Djiokap**, H. M. Tetchou Nganso and M. G. Kwato Njock. **Effects of the Electron's Anomaly in Relativistic Laser-Assisted Mott Scattering**, Phys. Scr. **75**, 726-733 (2007).

## INVITED TALKS

---

(Presenter is in italic)

1. *J.M. Ngoko Djiokap*, **Electron interference in atomic ionization by two crossing polarized ultrashort pulses**, International Symposium Intense Field Short Wavelength Atomic and Molecular Processes (ISWAMP), Virtual Meeting, Canada, 14-16 July 2021, 20-Minute Talk.
2. *J.M. Ngoko Djiokap*, **Dynamics of Two-Electron Atomic and Molecular Processes**, AMOS-Research PI meeting, Gaithersburg, Maryland, 26-28 October 2020, 3-Minute Talk.
3. *J.M. Ngoko Djiokap*, **Electron matter-wave vortices produced from atomic and molecular photoionization**, SPIE Optics + Photonics Digital Forum, San Diego, California, 24-28 August 2020.
4. *J.M. Ngoko Djiokap*, **Dynamical Electron Vortices in Attosecond Double Photoionization of H<sub>2</sub>**, 50th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Milwaukee, Wisconsin, 27-31 May 2019.
5. J.M. Ngoko Djiokap, and *Anthony. F. Starace*, **Applications of Elliptically-Polarized Few-Cycle Attosecond Pulses**, Mathematical and Numerical Methods for Time-Dependent Quantum Mechanics - from Dynamics to Quantum Information, Oaxaca, Mexico, 13-18 August 2017.
6. J.M. Ngoko Djiokap, N.L. Manakov, A.V. Meremianin, S.X. Hu, L.B. Madsen, and *Anthony. F. Starace*, **Nonlinear dichroism in double ionization of He by an intense elliptically-polarized few-cycle XUV pulse**, International Workshop on Strong Field Physics and Ultrafast Phenomena (SFPUP 2014), Zhangjiajie, Hunan, China, 1 November 2014.
7. J.M. Ngoko Djiokap, N.L. Manakov, A.V. Meremianin, S.X. Hu, L.B. Madsen, and *A.F. Starace*, **Nonlinear dichroism in double ionization of He by an intense elliptically-polarized few-cycle XUV pulse**, International Workshop on Atomic Physics, Max Planck Institute on the Physics of Complex Systems, Dresden, Germany, 24 November 2014.
8. *Anthony F. Starace*, with collaboration of J. M. Ngoko Djiokap, **Attosecond Physics - Probing and Controlling Matter on Its Natural Time Scale**, Session M14: Invited session: Physics for Everyone, APS March Meeting, Bull. Am. Phys. Soc. **59** (1), 486 (2014).
9. *Anthony F. Starace*, with collaboration of J. M. Ngoko Djiokap, Suxing Hu, Wei-Chao Jiang and Liang-You Peng, **Correlation Effects in Intense Laser-Atom Processes**, 2013 Joint Meeting of the APS DAMOP, and the CAP DAMOP, Quebec City, Quebec, Canada, 3-7 June 2013. Bull. Am. Phys. Soc. **58** (6), 131 (2013).

10. J. M. Ngoko Djiokap and *Anthony F. Starace* with collaboration of Suxing Hu, Wei-Chao Jiang and Liang-You Peng, **Electron correlation effects in intense laser-atom processes**, Atomic Molecular and Optical Science (AMOS) 2012 Research Meeting, Bolger Center, Potomac, MD, 28-31 October 2012.
11. J. M. Ngoko Djiokap and *Anthony F Starace*, **Evidence of the 2s2p(<sup>1</sup>P) Doubly-Excited State in the Harmonic Generation Spectrum of Helium**, 20th International Laser Physics Workshop, Sarajevo, Bosnia and Herzegovina, 15 July 2011.

## **SEMINARS AND COLLOQUIA**

(Presenter is in italic)

1. *J.M. Ngoko Djiokap*, **Control of Electron Motion on an Attosecond Timescale** Atomic, Molecular, Optical and Plasma (AMOP) Physics Seminar, University of Connecticut, Storrs, Connecticut, 24 February 2021.
2. *J.M. Ngoko Djiokap*, **Attosecond Physics: Near Future Prospects** Atomic, Molecular, Optical and Plasma (AMOP) Physics Seminar, U.S. Naval Academy, Annapolis, MD, 4 February 2021.
3. *J.M. Ngoko Djiokap*, **Attosecond Physics: Near Future Prospects** Atomic, Molecular, Optical and Plasma (AMOP) Physics Seminar, Missouri University of Science and Technology (MST), Rolla, MI, 8 March 2017.
4. *J.M. Ngoko Djiokap*, **Electron Vortices Produced by Elliptically Polarized Attosecond Pulses** Atomic, Molecular, Optical and Plasma (AMOP) Physics Seminar, University of Nebraska, Lincoln, NE, 19 April 2017.
5. *J.M. Ngoko Djiokap*, **Electron Vortices Produced by Elliptically Polarized Attosecond Pulses** James R Macdonald Laboratory AMO Seminar, Kansas State University, Manhattan, KS, 2 November 2016.
6. *A.F. Starace*, **Ionized Electron Vortices Produced by Circularly Polarized Attosecond Pulses** Quantum Optics and Laser Science (QOLS) Seminar, Imperial College, London, UK, 7 October 2016.
7. *J. M. Ngoko Djiokap*, **Ionization of He by an intense, Few-cycle Attosecond XUV Pulse**, AMO Seminar Series, Department of Physics and Astronomy, Aarhus University, Denmark, 27 November (2014).
8. *A.F. Starace*, **Nonlinear dichroism in double ionization of He by an intense elliptically-polarized few-cycle XUV pulse**, Seminar, Department of Physics, Peking University, Beijing, China, 6 November 2014.
9. *A.F. Starace*, **Using Attosecond XUV and Electron Pulses to Control and Image Electronic Motion**, Seminar, Department of Physics, Technical University of Munich, Garching, Germany, 21 November 2014.
10. *J. M. Ngoko Djiokap*, N. L. Manakov, A.V. Meremianin, S.X. Hu, L.B. Madsen, and Anthony F Starace, **Nonlinear dichroism in double ionization of He by an intense elliptically-polarized few-cycle XUV pulse**, KITP program: "Frontiers of Intense Laser Physics" University of California-Santa Barbara, CA, July-September (2014).



11. *J.M. Ngoko Djiokap* and A.F. Starace, **Evidence of the  $2s2p(^1P)$  Doubly Excited State in the Harmonic Generation Spectrum of He**, Seminar, Department of Physics and Astronomy, University of Nebraska-Lincoln, April (2011).

## **SELECTED CONTRIBUTED TALKS**

(Presenter is in italic)

1. *D. Peng* and *J.M. Ngoko Djiokap*, **Shortening isolated attosecond pulses from high-order harmonic generation by controlling a trajectory parameter**, 51th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Portland, Oregon, 1-5 June 2020.
2. *J.M. Ngoko Djiokap*, N. L. Manakov, A.V. Meremianin, S.X. Hu, L.B. Madsen, and Anthony F Starace, **Electron Matter-Wave Vortices in Double Photoionization of Helium by Attosecond Pulses**, 48th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Sacramento, CA, 5-9 June 2017.
3. *J.M. Ngoko Djiokap*, N. L. Manakov, A.V. Meremianin, S.X. Hu, L.B. Madsen, and Anthony F Starace, **Multi-arm Spiral Electron Vortices in Multiphoton Ionization by Circularly Polarized pulses**, 47th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Providence, RI, 23-27 May 2016.
4. *J.M. Ngoko Djiokap*, N. L. Manakov, A.V. Meremianin, S.X. Hu, L.B. Madsen, and Anthony F Starace, **Double Ionization of He by an Intense Elliptically-Polarized, Few-Cycle Attosecond Pulse**, 46th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Columbus, Ohio, 8-12 June 2015.
5. *J.M. Ngoko Djiokap*, N. L. Manakov, A.V. Meremianin, S.X. Hu, L.B. Madsen, and Anthony F Starace. **Nonlinear dichroism in double ionization of He by an intense elliptically-polarized few-cycle XUV pulse**, KITP Program: Frontiers of Intense Laser Physics, July 21 – September 19, 2014; Santa Barbara, CA.
6. *J.M. Ngoko Djiokap*, N. L. Manakov, A.V. Meremianin, and Anthony F Starace, **Carrier-envelope-phase-induced asymmetries in double ionization of Helium by an intense few-cycle XUV pulse**, 45th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Madison, Wisconsin, 2-6 June 2014.
7. *J.M. Ngoko Djiokap*, S. Hu, W.-C. Jiang, L.-Y. Peng, and *A.F. Starace*, **Electron Correlation Effects in Intense Laser-Atom Processes**, 4th International Conference on Attosecond Physics, Paris, France, 8-12 July 2013. [Selected for oral presentation.]
8. *J.M. Ngoko Djiokap* and A.F. Starace, **Electron Correlations in Harmonic Generation Spectra of Beryllium**, *Bull. Am. Phys. Soc.* **58** (6), 141 (2013).
9. *J.M. Ngoko Djiokap*, S.X. Hu, and A.F. Starace, **Asymmetries in Production of  $\text{He}^+(n = 2)$  with and Intense Few-Cycle Attosecond Pulse**, *Bull. Am. Phys. Soc.* **57** (5), 68 (2012).

10. *J.M. Ngoko Djiokap* and A.F. Starace, **Evidence of the 2s2p(1P) Doubly Excited State in the Harmonic Generation Spectrum of He**, Wildcorn Meeting, University of Nebraska-Lincoln, 15 October (2011).
11. *J.M. Ngoko Djiokap* and A.F. Starace, **Evidence of the 2s2p(<sup>1</sup>P) Doubly Excited State in the Harmonic Generation Spectrum of He**, Bull. Am. Phys. Soc. **56** (5), 70 (2011).
12. *J.M. Ngoko Djiokap*, E. Fomouo, M. G. Kwato Njock, X. Urbain and B. Piraux, **Electron-Impact Ionization Excitation of Helium in the Quasiphoton Regime**, Bull. Am.Phys.Soc. **55** (5),(2010).
13. *J.M. Ngoko Djiokap*, H. M. Tetchou Nganso and M. G. Kwato Njock. **Coulomb Effects in Relativistic Laser-Assisted Mott Scattering**, The 7th International Workshop of African network LAM, CEPAMOQ, Douala, Cameroon, 2004.
14. *J.M. Ngoko Djiokap*, H. M. Tetchou Nganso and M. G. Kwato Njock. **Effects of the Electron's Anomaly in Relativistic Laser-Assisted Mott Scattering**, The 6th Eduard Bouchet-Abdus Salam Institute International (EBASI) Conference, iThemba Labs, Cape Town, South Africa, 23-26 January 2007.

## **HIGH PERFORMANCE COMPUTING WORKSHOPS**

---

1. Participant to the **NICS/RDAV HPC Spring Workshop**, 524 Min Kao Engineering Building 1520 Middle Drive, Univ. of Tennessee–Knoxville, 19-22 March (2012).
2. Participant **Tools for computational physics**, Trieste, Italy, 6–11 March (2006).

## **AWARDS AND HONORS**

---

### **PI on a U.S. Department of Energy (DOE) Grant**

**2020-2022**

*University of Nebraska-Lincoln, Award Title: “Dynamics of Two-Electron Atomic and Molecular Processes,” 1 August 2020 – 31 July 2022.*

### **PI on a U.S. Department of Energy (DOE) Grant**

**2019-2020**

*University of Nebraska-Lincoln, Award Title: “Dynamics of Few-Body Atomic Processes,” 1 June 2017 – 31 May 2020. Note that the late Prof. Anthony Starace was PI on this grant from 6/1/2017 to 9/5/2019.*

### **PI on a U.S. National Science Foundation (NSF) Grant**

**2019-2021**

*University of Nebraska-Lincoln, Award Title: “Strong Field and Ultrafast Atomic and Molecular Processes,” 1 July 2015 – 31 August 2021. Note that the late Prof. Anthony Starace was PI on this grant from 6/1/2017 to 9/5/2019.*

A

1-Year Extension Supplement Request for those disproportionately impacted by COVID-19 has been submitted, May 20 2021.

### **Project Participant on U.S. DOE and EPSCoR Grants**

**2014-2017**

*University of Nebraska-Lincoln, Prof. A.F. Starace was the PI.*

<b>Project Participant on U.S. DOE Grant and NSF Grants</b> <i>University of Nebraska-Lincoln, with PI being Prof. A.F. Starace.</i>	<b>2010-2014</b>
<b>Administration des Relations Internationales Fellowship</b> <i>Universite catholique de Louvain, Belgium</i>	<b>2005-2009</b>
<b>Swedish International Development Agency (SIDA) Fellowship</b> <i>Universite of Douala, Cameroon</i>	<b>2004-2006</b>
<b>The Abdus Salam ICTP and SIDA Fellowship</b> <i>Young Collaborator under the Associate Scheme (The Abdus Salam ICTP, Trieste, Italy)</i>	<b>06/04-09/04</b>
<b>The Abdus Salam ICTP and CEPAMOQ Fellowship</b> <i>Universite of Douala, Cameroon</i>	<b>2002-2006</b>

## **REFERENCES**

---

1. Prof. Anthony F. Starace (Deceased), George Holmes University Professor, Department of Physics & Astronomy, University of Nebraska-Lincoln, Lincoln NE 68588-0299, Tel. 001 402 472 2795 Fax: 001 402 472 2879, E-mail: astarac1@unl.edu
2. Prof. Bernard PIRAUX, Catholic University of Louvain, Faculty of Science, Department of Physics, 2, Cyclotron Street, B-1348 Louvain-La-Neuve, Belgium Tel. (+32) 10 47 25 06 / Fax (+32) 10 47 24 31, E-mail: bernard.piraux@uclouvain.be
3. Prof. Lars Bojer Madsen, Department of Physics and Astronomy, Aarhus University, DK-8000 Aarhus C Tel. +4587155636, mobile: +4523382392, E-mail: bojer@phys.au.dk, www.phys.au.dk/bojer
4. Prof. Marcos Dantus, Department of Chemistry, Michigan State University, USA, Phone: +1-517-553-1191, Email: dantus@chemistry.msu.edu
5. Bradley Shadwick, Associate Professor, Vice-Chair of Department of Physics & Astronomy, University of Nebraska-Lincoln, Lincoln NE 68588-0299, Phone: 402-472-3578, Email: shadwick@unl.edu
6. Prof. Tim Gay, Department of Physics & Astronomy, University of Nebraska-Lincoln, Lincoln NE 68588-0299, Tel. 001 402 472 2773 Fax: 001 402 472 2879, E-mail: tgay1@unl.edu
7. Prof. Ilya Fabrikant, Department of Physics & Astronomy, University of Nebraska-Lincoln, Lincoln NE 68588-0299, Tel. 402-472-2774 Fax: 001 402 472 2879, E-mail: ifabrikant@unl.edu