

## **Emanuel V. Chimanski**

### **Postdoctoral Research Staff Member**

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### **Education & Training**

- ◆ Ph.D., Physics/Nuclear Physics, Aeronautics Institute of Technology (ITA), Brazil-2019:
  - Extension of the Quantum formalism for Multi Step Direct Reactions
  - Supervisors: Prof. Dr. Brett Vern Carlson (ITA) and Dr. Roberto Capote Noy (IAEA)
- ◆ M.S., Physics/Nonlinear dynamics and Complex Systems, Aeronautics Institute of Technology (ITA) , Brazil-2015:
  - Route to Hyperchaos in Rayleigh-Bénard Convection
  - Supervisors: Prof. Dr. Erico L. Rempel (ITA) and Dr. Roman Chertovskih (ITA)
- ◆ Machine Learning, Stanford|online/coursera – 2021.
- ◆ XX Jorge André Swieca Summer School on Theoretical Nuclear Physics, Brazil - 2021.
- ◆ XIX Jorge André Swieca Summer School on Theoretical Nuclear Physics, Brazil - 2019.
- ◆ School on Effective Field Theory across Length Scales at South American Institute for Fundamental Research, ICTP-SAIFR, Brazil – 2016.
- ◆ School on Physics Applications in Biology at South American Institute for Fundamental Research, ICTP-SAIFR, Brazil – 2016.

### **Computer Skills**

- ◆ GNU/Linux and Latex.
- ◆ FORTRAN, OpenMP, GnuOctave, Python, Jupyter, Mathematica.

### **Appointments**

- ◆ Postdoctoral - Lawrence Livermore National Laboratory (LLNL), Livermore/CA – US, March/2019 – present.
- ◆ Visiting Student - Florida State University – FSU (Physics Dep.) under supervision of Prof. Dr. Alexander Volya, Tallahassee/Florida – US, Oct-Dec/2018.
- ◆ Internship - International Atomic Energy Agency – IAEA (Nuclear Data Development Unit), Vienna – Austria, Sep/2017-Sep/2018.

### **Awards & Leadership Roles**

- ◆ My publication “Quasiparticle nature of excited states in random-phase approximation” was selected as Top 10 contributions in the quadrennium of the Post-Graduation Program. Phys. Rev. C 99 014305 (2019).
- ◆ Vice-chair of the APS chapter at the Lawrence Livermore National Laboratory (LLNL) – 2021.

### **Referee Activities**

- ◆ Proceedings for the CNR\*18 published online and in print by Springer Nature.
- ◆ Communications in Nonlinear Science and Numerical Simulations journal.
- ◆ Brazilian Journal of Physics.

## Publications

### Published

- ◆ **E. V. Chimanski**, and B. V. Carlson. Nucleon-induced inelastic scattering with statistical strength functions and the ECIS direct reaction code. EPJA, (2021).
- ◆ **E. V. Chimanski**, L.A. Souza, B. V. Carlson. The São Paulo Potential and the  $^3\text{He}$  Breakup Reaction at 130 MeV on  $^{93}\text{Nb}$  and  $^{197}\text{Au}$ . BJB, 51(2), 323-327 (2020).
- ◆ **E. V. Chimanski**, B. V. Carlson, R. Capote, A J Koning. Quasiparticle nature of excited states in random-phase approximation. Phys. Rev. C 99 014305 (2019).
- ◆ **E.V. Chimanski**. Extension of the Quantum Formalism for Multistep Direct Nuclear Reactions. 2019. 116f. Thesis of Doctor of Science – Instituto Tecnológico de Aeronáutica, São José dos Campos.
- ◆ **E. V. Chimanski**, R. Capote, B. V. Carlson and A J Koning. Statistical multi-step direct reaction models and the eikonal approximation CERN Proceedings series of the 15th edition of the Varenna Conference on Nuclear Reaction Mechanisms (2018).
- ◆ **E. V. Chimanski**, R. Capote, B. V. Carlson and A J Koning. Multi-step direct reaction models including collectivity in nucleon induced reactions , CNR\*18 Proceedings (2019).
- ◆ **E. V. Chimanski**, B. V. Carlson, R. Capote and A J Koning. The role of nucleon knockout in pre-equilibrium reactions CERN Proceedings series of the 15th edition of the Varenna Conference on Nuclear Reaction Mechanisms (2018).
- ◆ L. A. Souza, **E. V. Chimanski**, T. Frederico, B. V. Carlson, M. S. Hussein. Four-body eikonal approach to three-body halo nuclei scattering.
- ◆ Hussein, Mahi S. ; Souza, Lucas A. ; **Chimanski, Emanuel** ; Carlson, Brett; Frederico, Tobias. Inclusive Breakup Theory of Three-Body Halos. EPJ Web of Conferences (2017).
- ◆ **E. V. Chimanski**., Martins, C. G. L., Chertovskih, R., Rempel, E. L., Roberto, M., Caldas, I. L., Chian, A. C.-L. Intermittency and transport barriers in fluids and plasmas, In: From nonlinear dynamics to complex systems: A Mathematical modeling approach, Springer, Elbert E. N. Macau (Ed.), Springer.
- ◆ R. Chertovskih, **E. V. Chimanski** and E. L. Rempel. Route to hyperchaos in Rayleigh-Bénard convection, Euro Phys Lett, 112, 14001 (2015).
- ◆ **Emanuel V. Chimanski**, Erico L. Rempel, Roman Chertovskih. On-off intermittency and spatiotemporal chaos in three-dimensional Rayleigh-Bénard convection, Adv Space Res, 57, 1440 (2016).
- ◆ R. Chertovskih, E. L. Rempel, **E. V. Chimanski**, Magnetic field generation by intermittent convection, Phys. Lett. A, 381, 3300 (2017).

### Submitted and in Preparation

- ◆ **E. V. Chimanski**, B. V. Carlson, R. Capote, A J Koning. Extension of Nucleon-Induced Direct Reactions to Two Steps within the Multi-Step Direct Formalism. Phys. Rev. C. Submitted
- ◆ L.A. Souza, **E.V. Chimanski**, B.V. Carlson. Inclusive breakup cross sections induced by  $^6\text{He}$  and  $^6\text{Li}$ . Phys. Rev. C. Submitted. ArXiv:2012.14805.
- ◆ **E. V. Chimanski**, S. Peru, W. Younes and J. Escher. Projection formalism and the angular momentum restoration in deformed targets. In preparation.

## **Presentations**

### **Invited Talks:**

- ◆ Nuclear and Chemical Sciences Division (NACS), LLNL 2021.
- ◆ Department of Physics of Fluminense Federal University – RJ/Brazil, 2020.
- ◆ Department of Physics of Federal University of Cariri – CE/Brazil, 2020.
- ◆ Department of Physics and Astronomy Texas A&M University – Commerce/Texas – US, 2018.
- ◆ Department of Physics, Florida State University – FSU - Tallahassee/Florida – US, 2018.
- ◆ Lawrence Livermore National Laboratory – LLNL - Livermore/California – US, 2018.
- ◆ CEA, DAM, DIF, Bruyères-le-Châtel, France, 2018.

### **Contribute talks:**

- ◆ Division of Nuclear Physics Meeting (DNP—APS), 2020. Improving Inelastic Scattering Descriptions: Reaction Theory for Deformed Targets with the QRPA.
- ◆ Brazilian Meeting on Nuclear Physics, 2020. Nucleon Induced Reactions Theory for Deformed Target Nuclei: Angular Momentum Restoration and the QRPA; Inclusive Emissions from  $^3\text{He}$  Breakup Reaction on Medium and Heavy Targets.
- ◆ Far West Section Meeting (FWS – APS), 2020. Improving Inelastic Scattering Descriptions: Reaction Theory for Deformed Targets with the QRPA.
- ◆ Division of Nuclear Physics Meeting (DNP—APS), 2019. Improved Inelastic Scattering Descriptions for Nuclear Data Evaluations, Nuclear Structure and Reaction Studies.
- ◆ 6th International Workshop on Compound-Nuclear Reactions and Related Topics (CNR\*18), 2018. Multi-step direct reaction models including collectivity in nucleon induced reactions.
- ◆ 15th Varenna International Conference on Nuclear Reaction Mechanisms, 2018. Statistical multi-step direct reaction models and the RPA.
- ◆ 6th International Conference on Nonlinear Science and Complexity, 2016. Route to hyperchaos and Intermittency in Rayleigh-Bénard convection.

### **Posters:**

- ◆ XL Brazilian Meeting on Nuclear Physics, 2017. Reactions and structure of three-fragment weakly bound nuclei.
- ◆ Brazilian Physics meeting, 2016. Quasi-Particle – Quasi-Hole Nature of High Energy RPA Modes.
- ◆ National Meeting of Statistical Physics, 2015. Leaking square quantum billiards.
- ◆ Tenth Latin American Conference on Space Geophysics, Cusco-Peru 2014. Route to hyperchaos in Rayleigh-Bénard convection.
- ◆ Brazilian National Meeting on Condensed Matter Physics. Influence of obtuse and acute angles in statistic of energy levels of quantum polygonal billiards.
- ◆ Brazilian Physics meeting, 2011. Energy levels statistics in quantum obtuse triangular billiards.

## **Teaching Experience**

- ◆ Physics (mechanics ) Laboratory. Assistant teacher under supervision of Prof. Dr. Jose Silverio Edmundo Germano, ITA (Instituto Tecnológico de Aeronáutica – Brazil) 2015.
- ◆ Fundamental Physics 1. Assistant teacher under supervision of Prof. Dr. Ricardo Yoshimitsu Miyahara. UNICENTRO (Universidade Estadual do Centro Oeste – Brazil) 2012.