

# Alan Salcedo Gomez

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Updated: February 10, 2021

- EDUCATION**
- The Ohio State University (OSU)** August 2020 - Present  
Ph.D. in Physics, *Distinguished University Fellowship* GPA: 4.0/4.0
- The University of Texas at El Paso (UTEP)** December 2019  
B.Sc. in Physics and Mathematics, *honors degree* GPA: 4.0/4.0  
University Honors Thesis: Assessment of Fermi-Löwdin Orbitals on Self-Interaction Corrected Density Functional Theory with the Regularized SCAN Functional Approximation.
- RESEARCH EXPERIENCE**
- UTEP Physics Department** El Paso, TX  
Undergraduate Research Assistant January 2019 - May 2020  
Supervisor: **Prof. Rajendra Zope**
- Worked with the [FLOSIC](#) collaboration studying the Fermi-Löwdin Orbital Self-Interaction Correction Method on DFT using the regularized SCAN (rSCAN) functional approximation.
  - Compared the performance of SCAN and rSCAN with FLOSIC on electronic properties such as energies of atoms, ionization potentials, electron affinities, reaction barrier heights, and dissociation energies.
- Oak Ridge National Laboratory, Physics Division** Oak Ridge, TN  
*U. of Tennessee, Knoxville, Research Fellow* June 2018 - August 2018  
Supervisor: **Dr. Alfredo Galindo-Uribarri**
- Performed cuts on data and analysis of background for the [PROSPECT](#) experiment aiming to obtain an antineutrino energy spectrum from fission of  $^{235}\text{U}$  at the High Flux Isotope Reactor.
- MIT Center for Theoretical Physics** Cambridge, MA  
*MIT Summer Research Program (MSRP) Fellow* June 2017 - August 2017  
Supervisors: **Prof. John W. Negele**, Prof. Phiala Shanahan, Dr. Andrew Pochinsky
- Investigated the efficiency of Deep Neural Networks (DNN's) on classifying oscillators and predicting the evolution of their coordinates and momenta (read abstract [here](#)).
  - Wrote the codes generating training data sets with Python, constructed and trained the DNNs using TensorFlow.
- UTEP Physics Department** El Paso, TX  
*Undergraduate Research Assistant* June 2016 - May 2017  
Supervisor: **Prof. Jorge A. Lopez**
- Performed simulations of neutron-rich nuclear matter to study symmetry energy and to obtain an isospin-extended phase diagram of liquid-gas coexistence state using Classical Molecular Dynamics.
- PUBLICATIONS**
- 1 Yamamoto, Y., **Salcedo, A.**, Diaz, C., Alam, S., Baruah, T., Zope, R. (2020). Assessing the effect of regularization on the molecular properties predicted by SCAN and self-interaction corrected SCAN meta-GGA, *Phys. Chem. Chem. Phys.* DOI: 10.1039/d0cp02717k.

- CONFERENCE - TALKS**
- 1 **Salcedo A.**, Yamamoto, Y., Baruah, T., Zope, R. (2020). Assessment of SCAN and regularized SCAN functionals with and without Self Interaction Correction. APS March Meeting: DFT and Beyond I.
- CONFERENCE - POSTERS**
- 5 **Salcedo, A.**, Yamamoto, Y., Zope, R. (2019). Assessment of rSCAN with FLOSIC. *FLOSIC Collaboration Annual Meeting*.
  - 4 Venegas, D., **Salcedo, A.**, Galindo, A. (2018). Background Characterization at the High Flux Isotope Reactor. *5th Joint Meeting of the APS Division of Nuclear Physics and the Physical Society of Japan. Bulletin Vol. 63:12, HA 60\**.
  - 3 Hackett, B., **Salcedo, A.**, Venegas, D. (2018). Background Characterization at the High Flux Isotope Reactor. *25th International Conference on the Application of Accelerators in Research and Industry. CAARI Book of Abstracts, 189, #398*.
  - 2 **Salcedo, A.**, Lopez J., Terrazas, S., Gaytan, A. (2017). Liquid-gas Coexistence Phase in Nuclear Matter. *Fission Experiments and Theoretical Advances. FIESTA 2017 School & Workshop Book of Abstracts, 70*.
  - 1 **Salcedo, A.**, Lopez, J., Ramirez-Homs, E. (2016). Isospin-Symmetry Dependent Properties of Nuclear Matter. *Joint Meeting of the Four Corners and Texas Sections of the American Physical Society. Abstract ID: BAPS.2016.TSF.E1.53*
- SYMPOSIUM - POSTERS**
- 3 **Salcedo, A.**, Yamamoto, Y., Zope, R. (2019). Aspects of Self-Interaction Correction to the Regularized SCAN Functional on Density Functional Theory. *UTEP COURI Annual Symposium*.
  - 2 **Salcedo, A.**, Shanahan, P., Pochinsky, A., Negele, J. (2017). Classification of Dynamical Systems and Prediction of their Physical States Using Deep Learning. *31<sup>st</sup> Annual MIT Summer Research Poster Session. Link to [Abstract](#)*.
  - 1 **Salcedo, A.**, Lopez, J., Ramirez-Homs, E. (2016). Isospin-Symmetry Dependent Properties of Nuclear Matter. *UTEP COURI Annual Symposium*.
- SCHOOLS AND WORKSHOPS**
- 4 **Summer School in Theoretical Physics**; Utrecht University. Aug. 2018
  - 3 **PROSPECT Data Analysis Workshop**; Yale Wright Laboratory. July 2018
  - 2 **Fission Experiments and Theoretical Advances**; Los Alamos Nat. Lab. Sept. 2017
  - 1 **Nuclear Science Summer School (NS<sup>3</sup>)**; NSCL/Michigan State University. May 2017
- HONORS AND AWARDS**
- **\$2,000 Research Award**; OSU Physics Department. 2021
  - **State Youth Award for Academic Accomplishments**; Chihuahua State. 2020
  - **City Youth Award for Academic Accomplishments**; Juarez City. 2020
  - **Academic and Research Excellence Award**; UTEP Physics Dept. 2019
  - **Academic and Research Excellence Award**; UTEP Mathematics Dept. 2019
  - **Banner Bearer**; UTEP College of Science Winter Commencement. 2019
  - **CEU Travel Award**; APS Division of Nuclear Physics. 2018
  - **SURPASS Fellowship**; UTEP Campus Office of Undergraduate Research Initiatives. 2016
  - **Jovenes en Accion Finalist**; national leadership program; U.S. Embassy in Mexico. 2014
  - **State Youth Award for Social Engagement**; Chihuahua State<sup>†</sup>. 2014

\*Abstract submitted by Venegas, D. Poster presented by me.

<sup>†</sup>Shared with other 3 collaborators.

**TEACHING  
EXPERIENCE**

**Instituto Tesla de Ciudad Juarez**

*High School Lecturer*

- **Selected Topics in Physics II:** A survey of mechanical waves, EM fields, EM waves, special relativity, and quantum mechanics. Sp. 2020
  - Organized an information session for students with Clubes de Ciencia Mexico.

**UTEP Physics Department**

*Undergraduate Teaching Assistant*

- **Laboratory Instructor;** PHYS 2420, 3 per semester. Sp. 2020
- **Grader;** Analytical Mechanics I and Electromagnetics I. Fall 2019
- **Recitation Instructor;** PHYS 2420 and 2421 for Physics majors. Sp. 2018 - Sp. 2019
- **Recitation Instructor;** PHYS 2420, 2 per semester. Fall 2016 - Fall 2017
- **Grader;** Physical Science courses for education majors, 3 per semester. Sp. 2016

**COMMITTEE/  
COMMUNITY**

**MIT Summer Research Program, Application Review Committee.** 2020, 2021

**UTEP Society of Physics Students, President.** May 2019 - May 2020

**UTEP Society of Physics Students, Secretary.** August 2018 - May 2019

**U.S. Consulate in Juarez, MX, Youth Council, Found. Member.** Sept. 2014 - Sept. 2016

- Chaired logistics committee of leadership camp for 350 middle school students: *The Rolling Youth Camp* (Read note [here](#)).

**Transcendental Agents of Change (ACT), Cofounder.** August 2014 - May 2016

**SOFTWARE**

- **Data Analysis:** ROOT, Gnuplot.
- **Programming Languages:** C, Java, Python, Fortran90.
- **Other Software:** LaTeX, HDF.

**LANGUAGES**

- Spanish (Native Proficiency).
- English (Bilingual Proficiency).