

Alan Salcedo Gomez

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Updated: December, 2019

EDUCATION

The University of Texas at El Paso (UTEP)

December 2019

B.Sc. in Physics and Mathematics, *honors degree*

Overall GPA: 4.0/4.0

Honors Thesis: Assessment of Fermi-Löwdin Orbitals on Self-Interaction Corrected Density Functional Theory with the Regularized SCAN Functional Approximation.

- Member, University Honors Program (UHP)

March 2016 - December 2019

Escuela Preparatoria Central de Ciudad Juarez

June 2015

High School, valedictorian

GPA: 9.7/10.0

RESEARCH EXPERIENCE

UTEP Physics Department

El Paso, TX

Undergraduate Research Assistant

January 2019 - December 2019

Supervisor: **Prof. Rajendra Zope**

- Worked at the [FLOSIC](#) collaboration studying the Fermi-Löwdin Orbital Self-Interaction Correction Method on DFT with the regularized SCAN (rSCAN) functional.
- Compared the performance of rSCAN and SCAN on 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 aiding to obtain the antineutrino energy spectrum from fission of ^{235}U at the High Flux Isotope Reactor.
- Attended a one-week collaboration data analysis workshop at **Yale Wright Laboratory**.

MIT Center for Theoretical Physics

Cambridge, MA

MIT Summer Research Program 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.
- Created plots of energy and pressure per nucleon vs. density for the publication of *Symmetry energy in the liquid-gas mixture* (read acknowledgements [here](#)).

PUBLICATIONS	1 Yamamoto, Y., Salcedo A. , Baruah, T., Zope, R. (2020). Performance of regularized SCAN functional in numerical grids sensitive properties and in Fermi-Löwdin orbital self-interaction correction method. (In prep).	
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.	
CONFERENCE - POSTERS	5 Salcedo, A. , Yamamoto, Y., Zope, R. (2019). Assessment of rSCAN with FLOSIC. <i>FLOSIC Collaboration Annual Meeting</i> . 4 Venegas, D., Salcedo, A. , Galindo, A. (2018). Background Characterization at the High Flux Isotope Reactor. <i>5th Joint Meeting of the APS Division of Nuclear Physics and the Physical Society of Japan. Bulletin Vol. 63:12, HA 60</i> (Abstract submitted by D. V.). 3 Hackett, B., Salcedo, A. , Venegas, D. (2018). Background Characterization at the High Flux Isotope Reactor. <i>25th International Conference on the Application of Accelerators in Research and Industry. CAARI Book of Abstracts</i> , 189, #398. 2 Salcedo, A. , Lopez J., Terrazas, S., Gaytan, A. (2017). Liquid-gas Coexistence Phase in Nuclear Matter. <i>Fission Experiments and Theoretical Advances. FIESTA 2017 School & Workshop Book of Abstracts</i> , 70. 1 Salcedo, A. , Lopez, J., Ramirez-Homs, E. (2016). Isospin-Symmetry Dependent Properties of Nuclear Matter. <i>Joint Meeting of the Four Corners and Texas Sections of the American Physical Society. Abstract ID: BAPS.2016.TSF.E1.53</i>	
SYMPOSIUM - POSTERS	3 Salcedo, A. , Yamamoto, Y., Zope, R. (2019). Aspects of Self-Interaction Correction to the Regularized SCAN Functional on Density Functional Theory. <i>UTEP COURI Annual Symposium</i> . 2 Salcedo, A. , Shanahan, P., Pochinsky, A., Negele, J. (2017). Classification of Dynamical Systems and Prediction of their Physical States Using Deep Learning. <i>31st Annual MIT Summer Research Poster Session. Link to Abstract</i> . 1 Salcedo, A. , Lopez, J., Ramirez-Homs, E. (2016). Isospin-Symmetry Dependent Properties of Nuclear Matter. <i>UTEP COURI Annual Symposium</i> .	
SCHOOLS AND WORKSHOPS	3 Summer School in Theoretical Physics ; Utrecht University.	Aug. 2018
	2 Fission Experiments and Theoretical Advances ; Los Alamos Nat. Lab.	Sept. 2017
	1 Nuclear Science Summer School (NS³) ; NSCL/Michigan State University.	May 2017
HONORS AND AWARDS	• Academic and Research Excellence ; UTEP Physics Dept.	2019
	• Academic and Research Excellence ; 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 on Social Engagement ; State of Chihuahua (Shared).	2014

**TEACHING
EXPERIENCE**

Instituto Tesla de Ciudad Juarez

High School Lecturer

- **Selected Topics in Physics II:** A survey on EM waves, special relativity, and quantum mechanics. Sp. 2020

UTEP Physics Department

Undergraduate Teaching Assistant

- **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

UTEP Society of Physics Students, President May 2019 - Present

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

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

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).