Alex Pizzuto

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EDUCATION

University of Wisconsin - Madison
PhD Physics, in progress, 2017 - Present
Advisor: Justin Vandenbroucke
Research: Search for Astrophysical Transients with the IceCube Neutrino Observatory

Loyola University Chicago
Bachelor of Science, May 2017
Majors: Physics, Mathematics, Theoretical Physics and Applied Mathematics
summa cum laude (GPA: 3.95/4.00)

HONORS and AWARDS

Teaching Assistant Rookie of the Year, 2018
Barshall Incoming Graduate Fellowship, 2017
Horan Award for Excellent Graduating Senior in Physics, 2017
Full Tuition Presidential Scholarship, 2013-2017
Lee Teng Fellowship in Accelerator Physics, 2016
Mulcahy Research Fellow, 2015-2016, 2016-2017
Father Gerst Memorial Award for Excellence in Physics, 2014, 2016
Member of Interdisciplinary Honors Program, 2013-2017

RESEARCH EXPERIENCE

University of Wisconsin - Madison
Search for Astrophysical Transients with the IceCube Neutrino Observatory, 2017 - Present

- Performing an analysis in search of Fast Radio Bursts to favor leptonic or hadronic emission models.
- Created a followup to the ANITA detection of two neutrino candidate events during its third flight to provide upper limits on potential source neutrino emission.
- Maintain Fast-Response Analysis system to alert the astronomical community of neutrino correlation with recent astronomical discoveries from other observatories.

Semiconductor Quantum Computing, 2017

- Perform measurements of the Hall effect in silicon-based quantum devices and design laboratory electronics development

Loyola University Chicago
Extremal Black Hole Scalar Fields in dCS Gravity, 2016 - Present

- Apply techniques to solving inhomogeneous partial differential equations to obtain analytical solutions of the scalar fields from rotating black holes in dynamical Chern-Simons gravity.
- Funded through Loyola University Mulcahy Fellowship
- Presented poster at Chicago Area Undergraduate Research Symposium 2017 and undergraduate institution's 2017 research symposium.
- Manuscript prepared for submission

Calibrated Perturbational RF Cavity Simulation and Measurement, 2016

- Develop methodologies to perform calibrated field strength measurements in radio frequency cavities installed in the Advanced Photon Source at Argonne National Lab to diagnose higher order mode emittance growth and energy spread.
- Gave presentation at Argonne National Laboratory and presented poster at Fermi National Accelerator Laboratory.

Quantum Optics, 2014 - 2016

- Studied the verification of quantum mechanical duality using light and designed laboratories for an undergraduate Quantum Mechanics curriculum.
- Presented poster at undergraduate institution's 2016 research symposium.

Physics of the Human Voice, 2014

- Studied and described the harmonic patterns in varying voice types through the use of Fast Fourier Transforms.
- Gave presentation at 2014 American Association of Physics Teachers Meeting.

TEACHING EXPERIENCE

Teaching Assistant, University of Wisconsin - Madison, 2017
Physics 202: Electricity & Magnetism for Engineers

Teaching Assistant, Loyola University Chicago, 2014 - 2017
Physics 111L: Introductory Mechanics Lab
Physics 112L: Introductory Electricity & Magnetism Lab
Physics 111: Introductory Physics: Mechanics
Physics 112: Introductory Physics: Electricity & Magnetism
Physics 301: Mathematical Methods of Physics

Grader, Loyola University Chicago, 2016 - 2017
Physics 351: Electricity & Magnetism

EXTERNAL COURSEWORK

United States Particle Accelerator School
Colorado State University, Summer 2016

- Took a two week 3-credit intensive class with international accelerator physicists on fundamentals of accelerator physics.

Grade Received: A+

University of Buffalo, SUNY
Gifted Math Program, 2007 - 2013

- Attended university mathematics classes from seventh through twelfth grade to further advance an education in mathematics.

COMPUTER LANGUAGES

Proficient with all of the following languages and software suites:

- Python, Java, C#, *Mathematica*, LaTeX, LabView, MatLab, MathCad, CST Studio Suite, Poisson Superfish, Excel

EXTRA-CURRICULAR AFFILIATIONS

Volunteer, Wonders of Physics Outreach Program, 2017 - Present
Volunteer, Tutor for Loyola Physics Department, 2014 - 2017
Elected *Advertisting Public Relations Manager, Treasurer*, Loyola AcaFellas, 2013 - 2017
Member, Loyola Honors Student Association, 2013 - 2017

SELECTED CONFERENCES

IceCube Fall Collaboration Meeting
Stockholm, Sweden, September 2018

26^{th} Midwest Relativity Meeting
Perimeter Institute for Theoretical Physics, October 2016

25^{th} Midwest Relativity Meeting
Northwestern University, October 2015

SCIENTIFIC PAPERS: IceCube CONTRIBUTING AUTHOR	*Measurements using the inelasticity distribution of multi-TeV neutrino interactions in IceCube.* M. G. Aartsen et al. arXiv:1808.07629
	Joint constraints on Galactic diffuse neutrino emission from ANTARES and IceCube. A. Albert et al. arXiv:1808.03531
	Constraints on minute-scale transient astrophysical neutrino sources. M. G. Aartsen et al. arXiv:1807.11492
	Differential limit on the extremely-high-energy cosmic neutrino flux in the presence of astrophysical background from nine years of IceCube data. M. G. Aartsen et al. arXiv:1807.01820
Gamma-Ray Coordinate Network Circulars	GCN #23220: A. Pizzuto, for the IceCube Collaboration. *Search for Counterparts to IceCube 180908A with IceCube.* https://gcn.gsfc.nasa.gov/gcn3/23220.gcn3
PAPERS IN PROGRESS	*Legendre Decomposition of Extremal Black Hole Scalar Fields in Dynamical Chern-Simons Gravity,* with B. Skrzypek and R. McNees.