

SERGIO H. CANTU

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EDUCATION

Massachusetts Institute of Technology

PhD Candidate – Physics

2014-Present

Experimental Atomic Physics Group. Advisor : Vladan Vuletic

Subject of Study : Quantum nonlinear optics mediated by Rydberg atoms.

The University of Texas at Brownsville

B.S. Physics & B.S. Mathematics - Magna Cum Laude

2007-2012

Optics and Nanophotonics Group. Advisor: Malik Rakhmanov

Subject of Study : Optical Stabilization Devices for the Laser Interferometer

Gravitational-Wave Observatory (LIGO) system.

SCHOLARSHIPS/FELLOWSHIPS

NSF Graduate Research Fellow

2014 - Present

Center for Gravitational-Wave Astronomy (CGWA)-NASA Scholarship

2007 – 2012

Arecibo Remote Command Center Scholarship

2008

Sydney V. Neely Mathematics Scholarship

2008

PUBLICATIONS

Observation of three-photon bound states in a quantum nonlinear medium.

Q.-Y. Liang et. al Science 359, 783-786

2018

Symmetry-protected collisions between strongly interacting photons.

J.D. Thompson, et. al Nature. 2017 Feb 9;542(7640):206-209

2017

Teaching introductory undergraduate physics using commercial video games

Soumya D Mohanty and Sergio Cantu 2011 Phys. Educ. 46 570

2011

TALKS AND PRESENTATIONS

Three-photon interactions and spin exchange in a quantum nonlinear medium 47th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, May 23–27, 2016; Providence, Rhode Island

Low-Loss Optical Resonator for Laser Interferometer Gravitational-Wave Observatory. Undergraduate Poster Award, sponsored by OSA/SPIE, for Best Poster in Optics and Photonics. The National Society of Hispanic Physicists and The National Society of Black Physicists (NSBP-NSHP) joint annual meeting, February 2009. Symmetry-protected collisions between strongly interacting photons.

Laser Stabilization Techniques for Gravitational Wave Detectors. The American Physical Society Texas Section Meeting, 2010.

Interferometric Displacement Sensor for Advanced LIGO The Society for the Advancement of Chicanos and Native Americans in the Sciences (SACNAS) 2010 annual meeting.

Pulsar Search Results from the Arecibo Remote Command Center American Astronomical Society Meeting, vol. 215 (2010), p. 453.05.

Dynamic Response and Locking of Optical Resonators for LIGO APS Texas Section meeting, October 2009. Characterization of Optical Resonators for LIGO Annual Review Meeting for the Consortium for Nano-materials for Aerospace Commerce and Technology (CONTACT), UTPA, Edinburg, TX, September 2009.

Development of an electrochemistry-free Ionic Liquid Ion Source NSBP-NSHP Annual Joint Conference, September 2011, Austin TX

TEACHING EXPERIENCE

Massachusetts Institute of Technology - *Teaching Assistant : Atomic and Optical Physics II 2017*

Clubes de Ciencia Mexico – *Comunicación láser y encriptación (2015-2016)*
1-week workshop on laser communication and encryption. ([more info here](#))

IN THE MEDIA

- [Physicists create new form of light](#)
- [Computing at the Speed of Light, MIT Home page student profile.](#)
- [MIT Physics Annual Review \(2015\) : Student Profile](#)
- [When the good guys are wielding lasers](#)
- [Achievement : Sergio H. Cantu](#)
- [Gravitational Waves Detected 100 Years after Einstein's Prediction](#)