

GABRIEL CASABONA

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gcasabona.github.io

RESEARCH INTERESTS

- Compact binary stellar object mergers, type Ia supernovae, kilonovae, gamma ray bursts
- Magnetohydrodynamics, turbulence, r-process nucleosynthesis, general relativity

EDUCATION

University of Massachusetts Dartmouth	May 2019
M.S. in Physics	
Research Assistant	July 2018 - Present
Teaching Assistant	September 2017 - Present
 Florida International University	 May 2017
B.S. in Physics	
Resident Assistant	June 2015 - May 2017

PUBLICATIONS

Mozumdar, P., Fisher, R., & Casabona, G (Jul 2018). *Carbon Detonation Initiation in Turbulent Electron-Degenerate Matter*. arXiv:1807.03786 (in submission to ApJ)

RESEARCH EXPERIENCE

University of Massachusetts Dartmouth	October 2017 - May 2019
<ul style="list-style-type: none">• Worked with Robert Fisher to analyze the role of turbulence in the detonation of carbon in electron-degenerate matter. The FLASH4 code was used to solve the hydrodynamics and nuclear burning, motivated by the double-degenerate channel of Type Ia Supernovae.	

PRESENTATIONS

Casabona, G (Mar 2019). *Detonation Initiation in Type Ia Supernovae*.
APS March 2019. Boston, Massachusetts

Casabona, G (Jan 2019). *Detonation Initiation in Type Ia Supernovae*.
223rd Meeting of the AAS. Seattle, Washington

Casabona, G (Nov 2018). *Carbon Detonation Initiation in Turbulent Electron-Degenerate Matter*.
APS Bridge/NMC Conference 2018. Stanford University

Casabona, G (Nov 2018). *Carbon Detonation Initiation in Turbulent Electron-Degenerate Matter*.
APS New England 2018. University of Massachusetts Dartmouth

Casabona, G (Jul 2018). *Carbon Detonation Initiation in Turbulent Electron-Degenerate Matter*.
IHPCSS. Technical University of Ostrava, Czech Republic

Casabona, G (Apr 2018). *Carbon Detonation Initiation in Turbulent Electron-Degenerate Matter*.
APS April 2018. Columbus, Ohio

CONFERENCES & WORKSHOPS

Neutron Star Mergers for Non-Experts: GW 170817 in the Multi-Messenger Astronomy and FRIB Eras. (May 2018). Michigan State University

NuGrid/JINA/ChETEC School: Software Tools for Simulations in Nuclear Astrophysics. (Sep 2018). University of Hull, United Kingdom

PROGRAMMING

Proficient in Python for the use of data analysis and visualization.

Proficient with the Unix command system to maneuver in a computer terminal.

Experience with Fortran and C for scientific computing.

Experience with writing scientific documentation using L^AT_EX.

Advanced knowledge in High-Performance Computing techniques:

- Parallel Processing, MPI, OpenMP, Parallel I/O, Scientific Visualization

OUTREACH

Physics Honors Society ($\Sigma\Pi\Sigma$)

- Casabona, G & Tumeo, B., *et al* (Aug 2016). *Minority and Women in S.T.E.M. Outreach*. Women in S.T.E.M. Living Learning Community, Florida International University

Its On Us/ Sexual Assault Awareness

- Casabona, G., & Nephew, A. (Jul 2016). *Lets Talk About Sex*. Office of Residential Life, Florida International University

EXPERIENCE

STEM Learning Lab

September 2017 - December 2017

Tutor

UMass Dartmouth

· Facilitate the understanding of materials in the following subjects:

- Introductory Physics I-II, Quantum Mechanics, Thermodynamics, Electrodynamics
- Algebra, Pre-Calculus, Trigonometry, Calculus I-III, Differential Equations

ARC Learning Center

September 2016 - May 2017

Tutor

FIU

· Facilitate the understanding of materials in the following subjects:

- Introductory Physics I-II, General Chemistry I-II
- Algebra, Pre-Calculus, Trigonometry, Calculus I-III, Differential Equations

ORGANIZATION MEMBERSHIPS

Society of Physics Students

Physics Honors Society ($\Sigma\Pi\Sigma$)

American Astronomical Society

National Society of Black Physicists