Luca Boccioli

341 Nieuwland Science Hall, Notre Dame, IN 46556 • lbocciol@nd.edu
ORCID: 0000-0002-4819-310X

Education

Ph.D. Candidate in Physics, University of Notre Dame, IN 08/2017 - present
Advisor: Grant J. Mathews

M.A. in Physics, University of Perugia, Italy 10/2015 - 07/2017
110/110 *cum laude*
Thesis title: *The solar lithium abundance: a clue to understand weak interactions and hydrodynamical mechanisms in stars*
Advisor: Maurizio M. Busso

B.S. in Physics, University of Perugia, Italy 10/2012 - 09/2015
110/110 *cum laude*

Presentations

Invited Talks

SNEWS2.0 collaboration meeting (Purdue University, IN)
Explodability of core-collapse supernovae: the role of the equation of state and the accretion of the Si/O interface 08/2022

Contributed Talks

Workshop 3D Supernova (Remnants) (Valencia, Spain)
1D Core-Collapse Supernovae: the connection between explodability and progenitor structure 09/2022

13th Torino workshop (Perugia, Italy)
Core-Collapse Supernovae: the connection between explosion and progenitor structure 06/2022

JINA-CEE Frontiers in Nuclear Astrophysics (South Bend, IN)
Effect of the Nuclear Equation of State on the explosion of spherically symmetric core-collapse supernovae 05/2022

APS April meeting (New York City, NY)
Effect of the Nuclear Equation of State on Relativistic-Turbulence Induced Core-Collapse Supernovae 04/2022

APS DNP meeting (Virtual)
Effect of the Nuclear Equation of State and Relativistic Turbulence on Core-Collapse Supernovae 10/2021

Marcel-Grossman meeting (Virtual)
General Relativistic Neutrino-Driven Turbulence in One-Dimensional Core-Collapse Supernovae 07/2021

American Physical Society meeting (Virtual)
General Relativistic Neutrino-Driven Turbulence in One-Dimensional Core-Collapse Supernovae 04/2021

Midwest Relativity Meeting (University of Notre Dame, IN)
Relativistic Turbulence in 1D Core Collapse Supernova simulations 10/2020

American Physical Society meeting (Denver, CO)
Comparison between State-of-the-Art supernova simulations and the Notre Dame-Livermore supernova code 04/2019

Seminars

Current issues in core collapse supernovae (University of Perugia, Italy) 06/2018

Internal Talks

Astrophysics Seminar (Notre Dame, IN)
Relativistic Turbulence in 1D Core Collapse Supernova Simulations 04/2019

Posters

Nuclei in the Cosmos XVI (Virtual)
Effect of the Nuclear Equation of State on Relativistic-Turbulence Induced Core-Collapse Supernovae 09/2021

JINA-CEE Frontiers meeting (Michigan State University, MI)
Core-collapse supernovae simulations in spherical symmetry: turbulent convection in General Relativity 05/2019

Colleges of Science & Engineering Joint Annual Meeting (University of Notre Dame, IN)
Simulating the explosion of a Supernova for a detailed Nucleosynthesis study 12/2018

Professional Experience

Co-Organizer of the "*2023 CeNAM Frontiers Meeting*"	Michigan State University, MI	—/2023
Chair of the "*Aspects of Astrophysical Sources*" session Key Reactions in Nuclear Astrophysics	ECT* - Trento, IT (virtual)	06/2021
Co-Organizer of the "*Midwest Relativity Meeting*"	University of Notre Dame, IN	10/2020

Publications

Refereed Publications

Boccioli, L., Roberti, L., Limongi, M., Mathews, G. J, Chieffi, A. *Explosion mechanism of core-collapse supernovae: role of the Si/O interface* (2022), *submitted to ApJ*

Boccioli, L., Mathews, G. J., Suh, I., O'Connor, E. P. *Effect of the Nuclear Equation of State on Relativistic-Turbulence Induced Core-Collapse Supernovae* (2022), ApJ 926, 147

Boccioli, L., Mathews, G. J., O'Connor, E. P. *General Relativistic Neutrino-Driven Turbulence in One-Dimensional Core-Collapse Supernovae* (2021), ApJ 912, 29

Pizzone, R. G., ..., **Boccioli, L.**, ... *Indirect measurement of the* $^3He(n,p)^3H$ *reaction cross section at Big Bang energies* (2020), Eur. Phys. J. A 56, 199

Mathews, G. J., **Boccioli, L.**, Hidaka, J., Kajino, T. *New Insights into Uncertainties in the Relic Neutrino Background and Effects from the Nuclear Equation of State* (2020), MPLA 35, 25

Workshops & Schools

Life and Death: From Stars to Compact Objects	08/2022
iCERM: Advances and Challenges in Computational Relativity	09/2020
FRIB-TA Summer School: Dense matter in Astrophysics	06/2020
JINA Frontiers meeting Junior Researchers workshop	05/2019
Nuclei in the Cosmos XV Satellite School	06/2018

Grants, Honors & Awards

Outstanding Graduate Student Teacher Award ($100)	03/2022
Winner of 3MT Qualification Round ($100)	09/2021
ANPhA & AAPPS-DNP Award for Young Scientists (Best poster at NIC XVI)	09/2021
Graduate Student Union, Conference Presentation Travel Grant ($200)	04/2019
Division of Astrophysics Student Travel Grant for the 2019 APS April Meeting ($600)	02/2019
Graduate Student Professional Development Award ($625)	05/2018
Young Researchers Support for Nuclei in the Cosmos XV ($225)	05/2018

Teaching Experience

Grading, tutoring, and Lab TA experience, University of Notre Dame	08/2017 - 12/2021
Main instructor for "Computational Lab in QM", University of Notre Dame	02/2021 - 05/2021
Co-instructor for "Computational Lab in QM", University of Notre Dame	01/2020 - 05/2020
Tutoring experience, University of Perugia	01/2016 - 06/2017

Other Research Experience

ORISE Graduate Researcher at ORNL, Oak Ridge National Lab, TN	09/2019 - 12/2019

Technical skills

Computational Experience

Advanced experience: Python, Fortran
Moderate experience: C/C++, Matlab, Mathematica

Languages

Italian (native), English (fluent), Spanish (basic), French (basic)