

CURRICULUM VITAE
JOSEPH ADAM BARCHAS

EDUCATION:

Ph.D., Physics, Rice University, 2017

Thesis: *Radiative Transfer of Polarized X-rays: Magnetized Thomson Scattering in Neutron Stars*

Advisor: Matthew G. Baring

M.S., Physics, Rice University, 2014

Thesis: *Electrostatic Energy Exchange in Shock Acceleration*

Advisor: Matthew G. Baring

B.S., Physics, *summa cum laude*, University of Houston, 2008

Undergraduate Research Projects:

Computational analysis of particle beam data for proton therapy Partial assembly and calibration of ALICE particle detectors

Advisor: Lawrence Pinsky

TEACHING EXPERIENCE:

Instructor, Houston Community College, 2019-2021

Courses: University Physics, College Physics, Introductory Astronomy

Adjunct Instructor, Houston Community College, 2018-2019

Courses: University Physics, University Physics Laboratory

Guest Lecturer, Rice University, 2013-2016

Courses: Mathematical Methods, Classical Electromagnetism, Introduction to Astrophysics

Teaching Assistant, Rice University, 2010-2016

Courses: Mechanics, Modern Physics, Electromagnetism, Radiative Processes, General Relativity

AWARDS & HONORS

2017	William F. Marlar Memorial Foundation Scholarship, Rice University
2014	Kevin E. Strecker Award in Physics, Rice University
2008	University Honors, University of Houston
2005-2008	Dean's List, University of Houston

COMPUTER LANGUAGES AND PROFICIENCY

C/C++, Fortran, Mathematica, IGOR Pro

MISCELLANEOUS ACTIVITIES & OUTREACH

2012-2018 Graduate Tutor in Physics & Astronomy
2012 Participant, Cargese International School on QED & Quantum Vacuum
2012 Judge, Rummel Creek Elementary Science Fair, Houston, TX
2008-2009 Vice President, Society of Physics Students, University of Houston
2007-2008 Undergraduate Tutor in Physics, University of Houston

CONTRIBUTED TALKS & POSTERS

“Polarized X-ray Scattering and Birefringence in Magnetars” (Oral),

J. A. Barchas, M. G. Baring, 229th AAS Meeting (Jan 2017)

“Polarized Comptonized Emission in Magnetar Flares” (Poster),

J. A. Barchas, M. G. Baring, Sixth International Fermi Symposium (Nov 2015)

“Polarized X-ray Scattering and Birefringence in Magnetars” (Oral),

J. A. Barchas, M. G. Baring, 225th AAS Meeting (Jan 2015)

“Electrostatic Considerations in Shock Acceleration” (Oral),

J. A. Barchas, M. G. Baring, 27th Texas Symposium on Relativistic Astrophysics (Dec 2013)

“Energy Exchange through Cross-Shock Potentials in Relativistic Plasma Shocks” (Poster),

J. A. Barchas, M. G. Baring, 13th AAS/HEAD Meeting, (Apr 2013)

PUBLICATIONS

“Polarized Radiation Transfer in Neutron Star Surface Layers”,

J. A. Barchas, K. Hu, M. G. Baring,

Monthly Notices of the Royal Astronomical Society,

Volume 500, Issue 4, February 2021, Pages 5369–5392

“Radiative Transfer in Strongly Magnetized Plasmas: The Generalized Faraday Effect”,

J. A. Barchas, M. G. Baring 2021 (in prep)