JARED ROBERT RICE

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Postdoctoral Research Associate, Texas State University

Education	
PhD, Astronomy, 2018	University of Nevada, Las Vegas

Advisor: Bing Zhang, PhD Dissertation: Primordial black holes in the cosmological context and transient electromagnetic signatures from merging black hole binaries

MS, Physics, 2012 Montana State University

Advisors: Sachiko Tsuruta, PhD and Jiong Qiu, PhD

BS, Astrophysics, 2008 University of California, Santa Cruz

Advisor: Joel Primack, PhD

Research interests _

- X-ray and optical observations of high-energy astrophysical sources
 - X-ray binaries in interacting and starforming galaxies, X-ray and optical data analysis
- Electromagnetic counterparts of binary compact object mergers
 - EM radiation mechanisms, relativistic blast waves, evolving synchrotron spectra, interaction of EM fields with gravitational waves, predicting observational EM and GW signatures of compact object mergers
- Very long baseline interferometry of supermassive black hole jet cores
 - Probing black hole environments using the frequency-dependent synchrotron radio emission, utilizing the Very Long Baseline Array for astrometry of jet cores
- Primordial black holes
 - Accretion and evaporation histories of PBHs, importance of PBHs as cosmic messengers

Publications _

Metrics: Published papers: 10, Total citations: **60**, h-index: **5**, First author h-index: **2** ADS entries, ADS citation metrics

- 1. **Rice, J.R.**, Rangelov, B., Prestwich, A., Chandar, R., Bichon, L., and Boldt, C., *X-ray binaries in M51 I: catalog and statistical properties*, (in progress, 2021)
- 2. **Rice, J.R.**, Rangelov, B., Prestwich, A., Chandar, R., Bichon, L., and Boldt, C., *X-ray binaries in M51 II: individual sources*, (in progress, 2021)
- 3. **Rice, J.R.**, Rangelov, B., Chandar, R., and Prestwich, A., *Optical counterparts to X-ray sources in nearby starburst galaxies*, (in progress, 2021)
- 4. **Rice, J.R.** and Zhang, B., *Transient electromagnetic signatures from merging supermassive black hole binaries*, (in progress, 2021)
- 5. **Rice, J.R.**, Zavala, R.T., and Taylor, G.B., *Core shifts in compact symmetric objects*, (in progress, 2021)
- 6. Rice, J.R. and Zhang, B., Growth of stellar mass black holes in dense molecular clouds and GW190521, Astrophysical Journal, accepted (2020)
- 7. Lan, L., Lü, H.-J., Shen, J., **Rice, J.**, Li, L., and Liang, E.-W., *The properties of prompt emission in short GRBs with extended emission observed by* Fermi/*GBM*, Monthly Notices of the Royal Astronomical Society, **492**, 3622 (2020)

- 8. Lan, L; Lü, H.-J.; **Rice, J.**; and Liang, E.-W., Constraining the nuclear equation of state via gravitational-wave radiation of short gamma-ray burst remnants, Astrophysical Journal, **890**, 99 (2020)
- 9. Moravec, E. et al., *The early career perspective on the coming decade, astrophysics career paths, and the Decadal Survey process, APC White Papers No. 8*, Bulletin of the American Astronomical Society, **51**, 8 (2019)
- 10. Lü, H.-J., Shen, J.; Lan, L., **Rice, J.**, Lei, W.-H., Liang, E.-W. *Diagnosing the remnants of binary neutron star merger from GW170817/GRB170817A event*, Monthly Notices of the Royal Astronomical Society, **486**, 4479 (2019)
- 11. **Rice, J.R.**, *Primordial black holes in the cosmological context and transient electromagnetic signatures from merging black hole binaries*, ProQuest Dissertations and Theses (2018)
- 12. Lan, L., Lü, H.-J., Zhong, S.-Q., Zhang, H.-M., **Rice, J.**, Cheng, J.-G., Du, S.-S., Li, L., Lu, R.-J., and Liang, E.-W., *Characteristics of two-episode emission patterns in* Fermi *long gamma-ray bursts*, Astrophysical Journal, **862**, 155 (2018)
- 13. **Rice, J.R.** and Zhang, B., Cosmological evolution of primordial black holes, Journal of High Energy Astrophysics, **13**, 22 (2017)
- 14. Lü, H.-J., Zhang, H.-M., Zhong, S.-Q., Hou, S.-J., Sun, H., **Rice, J.**, and Liang, E.-W., *Magnetar central engine and possible gravitational wave emission of nearby short GRB 160821B* Astrophysical Journal, **835**, 181 (2017)
- 15. Li, L.B., Zhang, Z.B., and **Rice**, **J.**, *Radio afterglow rebrightening: evidence for multiple active phases in gamma-ray burst central engines*, Astrophysics and Space Science, **359**, 37 (2015)

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• Referee, Journal of High Energy Astrophysics

Textbook editing and illustrations _

- Copyedited and produced numerous figures for Bing Zhang, *The Physics of Gamma-Ray Bursts*, ISBN: 978-1-139-22653-0, Cambridge University Press (2018)
- Produced various diagrams for Thomas Banks, *Modern Quantum Field Theory: A Concise Introduction*, ISBN: 978-0-521-85082-7, Cambridge University Press (2008)

Awards __

US Naval Observatory Flagstaff Station Colloquium Honorarium	(2018)	\$	250
• Nevada NASA Space Grant Consortium Graduate Research Fellowship	(2016)	\$:	10,500
UNLV Foundation Bigelow Travel Grant	(2014)	\$	4,000
NSF REU Research Grant	(2007)	\$	5,000
UCSC Crown College Undergraduate Research Fellowship	(2007)	\$	700
MSU Excellent Graduate Teaching Assistant Award	(2014)		

Skills _

- General: Python/iPython, SAOImageDS9, LATEX, IDL, HTML
- X-ray data analysis: Chandra Interactive Analysis of Observations (CIAO)
- Optical data analysis: Image Reduction and Analysis Facility (IRAF)
- Radio data reduction: Astronomical Image Processing System (AIPS)
- Gravitational wave data analysis: GWpy and PyCBC

Teaching_

- Adjunct Instructor of Physics (2012/2013), Miami University, Oxford, OH
- Adjunct Instructor of Physics (2013), Miami University Hamilton, Hamilton, OH
- Graduate Teaching Assistant (2013 2018), UNLV
- Graduate Teaching Assistant (2009 2012), MSU
- Guest lecturer, Solar System Astronomy (Fall 2011), MSU

Conferences & Workshops.

- ALMA Community Day Event, UT Austin, Austin, TX, April 8, 2019
- Early Career Astronomer and Astrophysicist Focus Session for the 2020 Decadal Survey, Washington, DC, October 8–9, 2018
- 16th Synthesis Imaging Workshop, New Mexico Tech, Socorro, NM, May 16–23, 2018
- LIGO Open Data Workshop #1, Caltech, Pasadena, CA, March 25–27, 2018
- IAU 338: GW Astrophysics: Early Results from GW Searches and EM Counterparts, 2017
 - Contributed talk: "Radio afterglow of gravitation-driven plasma waves in SMBH binary mergers"
- Eighth Huntsville Gamma-Ray Burst Symposium, 2016
 - Poster: "Cosmological evolution of primordial black holes"
- UNLV/Caltech Radio Transient Workshop, Las Vegas, 2016
- UNLV Gamma-Ray Bursts and Numerical Simulations Workshop, Las Vegas, 2015
- European Week of Astronomy and Space Science; Geneva, Switzerland, 2014
- IAU 307: New Windows on Massive Stars; Geneva, Switzerland, 2014
- UCSC Galaxy Formation and Evolution Workshop; Santa Cruz, 2007
- All-Wavelength Extended Groth Strip International Survey Meeting; Santa Cruz, 2006

Outreach _

- Astronomy Day Volunteer (2010 2012), Museum of the Rockies, Bozeman, MT
- Instructor, Rocket Physics (2011), MSU Peaks & Potentials (elementary students)

Professional references _

1. Blagoy Rangelov, PhD, Assistant Professor of Astrophysics, Texas State University

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2. Bing Zhang, PhD, Distinguished Professor of Astrophysics, UNLV

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Website: http://www.physics.unlv.edu/~bzhang/

3. Darrell Pepper, PhD, Professor of Mechanical Engineering, UNLV

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4. Robert Zavala, PhD, Astronomer, United States Naval Observatory, Flagstaff Station

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