

Geoffrey Ryan

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EDUCATION

- 2017 Ph.D. Physics, New York University, Advisor: Andrew MacFadyen
Thesis: Numerical Simulations Of Black Hole Accretion
- 2011 M.Sc. Physics, University of Alberta, Advisor: Alexander Penin
Thesis: The High Energy Logarithms in Two Loop Electroweak Bhabha Scattering
- 2009 B.Sc. (Hons) Mathematical Physics, University of Alberta

PROFESSIONAL APPOINTMENTS

- 2017-2020 Joint Space-Science Institute Prize Fellow
University of Maryland College Park & NASA Goddard Space Flight Center
- 2020- Post Doctoral Associate, Astroparticle Physics Lab
University of Maryland College Park & NASA Goddard Space Flight Center

PUBLICATIONS

Journal Articles

- 2020 Kelly, B. J., Eteinne, Z. B., Golomb, J., Schnittman, J. D., Baker, J. G., Noble, S. C., and **Ryan, G.**
“Electromagnetic Emission from a Binary Black Hole Merger Remnant in Plasma:
Field Alignment and Plasma Temperature”,
Phys. Rev. D submitted, 2020, [arXiv:astro-ph/2010.11259]
- 2020 Cunningham, V., Cenko, S.B., **Ryan, G.**, Vogel, S., Corsi, A., Cucchiara, A., Fruchter, A.,
Horesh, A., and Kangas, T., Kocevski, D., Perley, D., and Racusin, J.
“GRB 160625B: Evidence for a Gaussian-Shaped Jet”,
MNRAS accepted, 2020, [arXiv:astro-ph/2009.00579]
- 2020 Troja, E., van Eerten, H., Zhang, B., **Ryan, G.**, Piro, L., Ricci, R., O’Connor, B., Wieringa, M. H.,
Cenko, S. B., and Sakamoto, T. “A thousand days after the merger: continued X-ray emission
from GW170817” *MNRAS*-submitted, 2020, [arXiv:astro-ph/2006.01150]
- 2020 **Ryan, G.**, van Eerten, H., Piro, L., and Troja, E.
“Gamma-Ray Burst Afterglows In The Multi-Messenger Era: Numerical Models and Closure Relations”
ApJ 896 (2020), 2, 166 [arXiv:astro-ph/1909.11691]

- 2019 Troja, E., Castro-Tirado, A.J., Becerra Gonzalez, J., Hu, Y., **Ryan, G.S.**, Cenko, S.B., Ricci, R., Novara, G., Sanchez-Ramirez, R., Acosta-Pulido, J.A., Caballero Garcia, M.D., Guziy, S., Jeong, S., Lien, A.Y., Marquez, I., Pandey, S.B., Park, I.H., Tello, J.C., Sakamoto, T., Sokolov, I.V., Sokolov, V.V., Tiengo, A., Valeev, A.F., Zhang, B.B., and Veilleux, S.
"The Afterglow And Kilonova Of The Short GRB 160821B"
MNRAS 489 (2019) 2104-2116, [arXiv:astro-ph/1905.01290]
- 2019 Troja, E., van Eerten, H., **Ryan, G.**, Ricci, R., Burgess, J.M., Wieringa, M., Piro, L., Cenko, S.B., and Sakamoto, T. "A Year In The Life Of GW170817: The Rise And Fall Of A Structured Jet From A Binary Neutron Star Merger" *MNRAS* 489 (2019) 1919-1926, [arXiv:astro-ph/1808.06617]
- 2019 Piro, L., Troja, E., Zhang, B., **Ryan, G.**, van Eerten, H., Ricci, R., Wieringa, M. H., Tiengo, A., Butler, N.R., Cenko, S.B., Fox, O.D., Kandrika, H.G., Novara, G., Rossi, A., and Sakamoto, T.
"A Long-Lived Neutron Star Merger Remnant In GW170817: Constraints And Clues From X-Ray Observations" *MNRAS* 483 (2019) 1912-1921, [arXiv:astro-ph/1810.04664]
- 2018 Troja, E., **Ryan, G.**, Piro, L., van Eerten, H., Cenko, S.B., Yoon, Y., Lee, S.K., Im, M., Sakamoto, T., Gatkine, P., Kutyrev, A., and Veilleux, S.
"A Luminous Blue Kilonova And An Off-Axis Jet From A Compact Binary Merger At $z = 0.1341$ "
Nature Communications 9 (2018) id. 4089, [arXiv:astro-ph/1806.10624]
- 2018 Troja, E., Piro, L., **Ryan, G.**, van Eerten, H., Ricci, R., Wieringa, M.H., Lotti, S., Sakamoto, T., and Cenko, S.B. "The Outflow Structure Of GW170817 From Late-Time Broad-Band Observations" *MNRAS* 478 (2018) L18-L23, [arXiv:astro-ph/1801.06516]
- 2017 **Ryan, G.**, and MacFadyen, A. "Minidisks in Binary Black Hole Accretion"
ApJ 835 (2017) 199, [arXiv:astro-ph/1611.00341]
- 2015 **Ryan, G.**, van Eerten, H., MacFadyen, A., and Zhang, B.B.
"Gamma Ray Bursts Are Observed Off-Axis." *ApJ* 799 (2015) 3, [arXiv:astro-ph/1405.5516]
- 2015 Zhang, B.B., van Eerten, H., Burrows, D., **Ryan, G.**, Evans, P.A., Racusin, J., Troja, E., and MacFadyen, A.
"Revisiting The GRB Jet-Break Problem With CHANDRA Deep Follow-up Data."
ApJ 806 (2015) 15, [arXiv:astro-ph/1405.4867]
- 2011 Penin, A., and **Ryan, G.** "Two-Loop Electroweak Corrections To High Energy Large-Angle Bhabha Scattering." *JHEP* 1111 (2011) 081, [arXiv:hep-ph/1112.2171]

White Papers and Proceedings

- 2019 Kara, E., Margutti, R., Keivani, A., Fong, W., Cenko, B., Noble, S., Mushotzky, R., Burns, E., **Ryan, G.**, Ruan, J., Haggard, D., Burrows, D., Fox, D., and Caputo, R.
"X-ray follow-up of extragalactic transients" Astro2020: Decadal Survey, Science White Paper no. 112
BAAS 51 (2019) 3 id.112 [arXiv:astro-ph/1903.05287]
- 2013 **Ryan, G.**, van Eerten, H., and MacFadyen, A. "Fitting Afterglows With Multi-Dimensional Simulations."
in Proceedings of the 7th Huntsville Gamma-Ray Burst Symposium, Nashville, Tennessee, USA, 2013,
edited by N. Gehrels, M. S. Briggs and V. Connaughton, eConf C1304143, 30, 2013

Codes

afterglowpy	Gamma ray burst afterglow models in Python, lead developer
ScaleFit	Gamma ray burst afterglow parameter estimation, lead developer
disco	Massively parallel moving mesh GRMHD, co-developer

OBSERVING PROPOSALS

2020	VLA Semester 20B "The collimation and energetics of short gamma-ray bursts" PI Troja, 6 hrs
2020	VLA Semester 20B "Electromagnetic counterparts to gravitational wave events" PI Troja, 29 hrs
2020	ATCA "Late-time emergence of the radio kilonova of GW ₁₇₀₈₁₇ " PI Piro
2020	GMRT Cycle 38 "Electromagnetic counterparts of Gravitational Wave events: radio follow-up with uGMRT" PI Troja, 4.5 hrs
2019	GMRT Cycle 37 "Electromagnetic counterparts of Gravitational Wave events: radio follow-up with uGMRT" PI Troja, 20 hrs
2019	GMRT Cycle 36 "Electromagnetic counterparts of Gravitational Wave events: radio follow-up with uGMRT" PI Troja, 9 hrs
2018	ATCA "The relativistic outflow of GW ₁₇₀₈₁₇ and the nature of the central remnant with ATCA" PI Piro
2018	ATCA "Probing the relativistic outflow of GW ₁₇₀₈₁₇ with ATCA" PI Piro
2018	CXO Cycle 20 "Electromagnetic Counterparts To Gravitational Wave Sources: A Synergistic Follow-Up With Chandra And The VLA" PI Troja, 350 ks CXO & 19.3 hrs VLA
2018	XMM-Newton AO 18 "Observing The Gravitational Wave Sky With XMM-Newton" PI Piro, 330 ks XMM, 150ks NuSTAR, & 3 hrs VLA

TALKS

2020	"Structured Jets At All Angles" Observational Astronomy Meeting CIERA Northwestern University, Evanston, Illinois, USA. February 10
2019	"Structured Jets At All Angles" Astrophysics Seminar University of Bath, Bath, United Kingdom. December 11
2019	"Structured Jets At All Angles" Director's Seminar Goddard Space Flight Center, Greenbelt, Maryland, USA. October 11
2018	"The Afterglows Of Structured Jets" JSI Mini-Symposium University of Maryland, College Park, Maryland, USA. November 2
2017	"Lighting Up Accretion Disks With Binary Black Holes" Astronomy Colloquium University of Maryland, College Park, Maryland, USA. September 13
2014	"Gamma-Ray Bursts Are Observed Off-Axis." Institute for Theory and Computation Seminar Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts, USA. September 23

CONFERENCE AND WORKSHOP PARTICIPATION

- 2019 Talk: "Structured Jets At All Angles"
30th Texas Symposium On Relativistic Astrophysics
Portsmouth, United Kingdom. December 15 - December 20
- 2019 Talk: "Structured Jets At All Angles"
Yamada Conference LXXI: Gamma-ray Bursts in the Gravitational Wave Era 2019
Yokohama, Kanagawa, Japan. Oct 28 - Nov 1
- 2019 Poster: "Structured Jets At All Angles"
Astrophysics With Gravitational-Wave Populations
Aspen Center For Physics, Aspen, Colorado, USA. February 9-February 15
- 2019 Talk: "Structured Jets and GW170817A"
Physics and Astrophysics at the eXtreme (PAX) V
State College, Pennsylvania, USA. February 7
- 2018 Poster: "The Afterglows Of Structured Jets"
JSI - Gravitational Wave Physics And Astronomy Workshop
College Park, Maryland, USA. December 1-December 4
- 2017 Dissertation Talk: "Black Hole Accretion Discs on a Moving Mesh"
American Astronomical Society Meeting 229
Grapevine, Texas, USA. January 3-January 7
- 2016 Time-Domain Astrophysics: Incorporating Observations, Theory, and Computation
Radcliffe Institute for Advanced Study, Cambridge, USA. November 17-November 18
- 2016 Poster "Minidisks in Circumbinary Black Hole Accretion"
21st International Conference on General Relativity and Gravitation
Columbia University, New York City, USA. July 10-July 15
- 2014 International Summer School on Astro-Computing - Nuclear and Neutrino Astrophysics
San Diego Supercomputing Center, University of California, San Diego, USA. July 21-August 1
- 2013 Poster "Fitting Afterglows With Multi-Dimensional Simulations."
7th Huntsville Gamma-Ray Burst Symposium, Nashville, Tennessee, USA. April 14-18
- 2011 Science Communication Workshop
Arthur L. Carter Journalism Institute, New York University, New York, USA. Fall
- 2010 SLAC Summer Institute: Neutrinos - Nature's Mysterious Messengers,
SLAC National Accelerator Laboratory, Menlo Park, California, USA. August 2-13

FELLOWSHIPS AND AWARDS

- 2019 Postdoctoral Prize For Excellence
University of Maryland Department of Astronomy, May 2019
- 2017 Joint Space-Science Institute Prize Fellowship
University of Maryland and NASA Goddard Space Flight Center, Fall 2017 - Summer 2020
- 2015 Dean's Dissertation Fellowship
New York University, Fall 2015 - Summer 2016

- 2015 Dean's Outstanding Graduate Student Teaching Award, New York University
- 2014 James Arthur Fellowship
New York University, Fall 2014 - Summer 2015
- 2013 James Arthur Fellowship
New York University, Fall 2013 - Summer 2014
- 2011 Henry M. MacCracken Fellowship
New York University, Fall 2011 - Fall 2015
- 2011 Graduate Student Teaching Award, University of Alberta
- 2011 Graduate Student Scholarship, Government of Alberta

TEACHING EXPERIENCE

New York University

- 2016 Graduate Computational Physics, General Relativity
- 2014 Graduate Computational Physics
- 2013 Graduate Quantum Mechanics II
- 2012 Graduate Quantum Mechanics I, Introductory Experimental Physics II

University of Alberta

- 2011 Physics 146
- 2010 Physics 144, Physics 126
- 2009 Physics 124

OUTREACH AND SERVICE

University of Maryland

- 2020 GRAD-MAP Winter Workshop Mentor
- 2019 GRAD-MAP Open House & Site Visit Speaker
- 2019- Better Astronomy for the Next Generation (BANG) Seminar Organizing Committee
- 2017-2020 Department of Astronomy Equity, Diversity, and Inclusion Committee

NASA Goddard Space Flight Center

- 2019- Ask An Astrophysicist contributor