

Ramandeep Gill

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Nationality: Canadian

Research Interests

- **GRB and AGN jets:** Spectral modeling of jets, radiation transfer, kinetic simulations, MHD simulations of jets, jet geometry and composition, high energy processes
- **Neutron stars:** Magnetic field decay, magnetar bursts, population synthesis, neutron star cooling, Pulsar/magnetar wind nebulae
- **Relativistic plasmas:** Plasma waves, mode coupling to radiation, turbulence, magnetic reconnection, cosmic-rays
- **Axions:** Constraints on axion properties from astrophysical sources, polarization measurements, and blazars

Employment

- **The Open University of Israel** 2015 - 2017
Topic: *High magnetization jets in GRBs*
- **Canadian Institute for Theoretical Astrophysics** 2012 - 2015
Topic: *Strongly magnetized relativistic outflows and GRBs*

Education

- **PhD in Astrophysics** 2012
University of British Columbia
Thesis: *Astrophysical Plasmas Near Strongly Magnetized Compact Objects*
Advisor: *Prof. Jeremy Heyl*
- **BSc in Physics and Astronomy (Hons.)** 2007
University of British Columbia
Thesis: *The Birthrate of Magnetars*
Advisor: *Prof. Jeremy Heyl*

Awards

- **Open University Fellowship** 2017 - 2018
- **100,000 cpu hrs on SuperMUC supercomputer** 2017
- **100,000 cpu hrs on HazelHen supercomputer** 2017
- **University Research Fund (OUI)** 2016 - 2017
- **Outstanding Postdoctoral Researcher Fellowship (OUI)** 2015 - 2016
- **CITA Fellowship** 2012 - 2015
- **NSERC Canada Graduate Scholarship** 2009 - 2012

- **Four Year Fellowship** (UBC) 2009 - 2012
- **Graduate Research Mobility Award** (UBC) 2009
- **Graduate Entrance Scholarship** (UBC) 2007

Publications

1. **Gill, R.**, Granot, J., & Lyubarsky, Y. [2D Relativistic MHD Simulations of the Kruskal-Schwarzschild Instability in a Relativistic Striped Wind](#), 2017, *Submitted to MNRAS*
2. Vianello, G., **Gill, R.**, Granot, J. Omodei, N., Cohen-Tanugi, J., & Longo, F. [The Bright and the Slow – GRBs 100724B & 160509A with High-energy Cutoffs at \$\lesssim 100\$ MeV](#), 2017, *Submitted to ApJ*
3. Younes, G., Kouveliotou, C., Jaodand, A., Baring, M. G., van der Horst, A. J., Harding, A. K., Hessels, J. W. T., Gehrels, N., **Gill, R.**, Huppenkothen, D., Granot, J., Göğüş, E., & Lin, L. [X-ray and radio observations of the magnetar SGR J1935+2154 during its 2014, 2015, and 2016 outbursts](#), 2017, *Submitted to ApJ*
4. Göğüş, E., Lin, L., Roberts, O. J., Chakraborty, M., Kaneko, Y., **Gill, R.**, Granot, J., van der Horst, A. J., Watts, A. L., Baring, M. G., Kouveliotou, C. Huppenkothen, D., & Younes, G. [Burst and Outburst Characteristics of Magnetar 4U 0142+61](#), 2017, *ApJ*, 835, 68
5. Fermi-Collaboration(+ **Gill, R.** +). [Searching the Gamma-ray Sky for Counterparts to Gravitational Wave Sources: Fermi GBM and LAT Observations of LVT151012 and GW151226](#), 2017, *ApJ*, 835, 82
6. Granot, J., **Gill, R.**, Younes, G., Gelfand, J., Harding, A., Kouveliotou, C., & Baring, M. G. [Learning About the Magnetar Swift J1834.9-0846 from its Wind Nebula](#), 2017, *MNRAS*, 464, 4895
7. Guiriec, S., Kouveliotou, C., Hartmann, D. H., Granot, J., Asano, K., Meszaros, P., **Gill, R.**, Gehrels, N., & McEnery, J. [A Unified Model for GRB Prompt Emission from Optical to Gamma-Rays; a New Type of Standard Candle](#), 2016, *ApJ*, 831L, 8
8. Younes, G., Kouveliotou, C., Kargaltsev, O., **Gill, R.**, Granot, J., Watts, A. L., Gelfand, J., Baring, M. G., Harding, A., Pavlov, G. G., van der Horst, A. J., Huppenkothen, D., Göğüş, E., Lin, L., & Roberts, O. J. [The wind nebula around magnetar Swift J1834.9-0846](#), 2016, *ApJ*, 824, 138
9. Thompson, C. & **Gill, R.** [Pulse Structure of Hot Electromagnetic Outflows with Embedded Baryons](#), 2014, *ArXiv:1406.5239*
10. **Gill, R.** & Thompson, C. [Non-Thermal Gamma-Ray Emission from Delayed Pair-Breakdown in a Magnetized and Photon-Rich Outflow](#), 2014, *ApJ*, 796, 81
11. Thompson, C. & **Gill, R.** [Hot Electromagnetic Outflows. III. Displaced Fireball in a Strong Magnetic Field](#), 2014, *ApJ*, 791, 30
12. **Gill, R.** & Heyl, J. [Statistical Ages and the Cooling Rate of X-Ray Dim Isolated Neutron Stars](#), 2014, *MNRAS*, 435, 3243
13. **Gill, R.** & Heyl, J. [Constraining the Photon-Axion Coupling Constant with Magnetic White Dwarfs](#), 2011, *PRD*, 84, 085001

14. Heyl, J., **Gill, R.** & Hernquist, L. [Cosmic Rays from Pulsars and Magnetars](#), 2010, MNRAS, 406, L25
15. **Gill, R.** & Heyl, J. [On the Trigger Mechanisms of Soft Gamma-Repeater Giant Flares](#), 2010, MNRAS, 407, 1926
16. **Gill, R.** & Heyl, J. [Dispersion Relations for Bernstein Waves in a Relativistic Plasma](#), 2009, PRE, 80, 036407
17. **Gill, R.** & Heyl, J. [The Birthrate of Magnetars](#), 2007, MNRAS, 381, 52

Conferences, Seminars, & Workshops

1. High Energy Astrophysics Workshop, HUJI, Jerusalem. Title: *On the origin of the GeV/TeV emission from H.E.S.S. J1834-087* 2017
2. National Israeli Astronomy Seminar, Tel Aviv University. Title: *What's Powering the Magnetar Wind Nebula Around Swift J1834.9-0846?* 2017
3. PiTP Summer School on *Computational Plasma Astrophysics*, Institute for Advanced Study, Princeton 2016
4. Dynamical Processes in Space Plasmas, Dead Sea, Israel. Title: *GRB Prompt-phase Spectrum in High Sigma Outflows* 2016
5. AAS HEAD Meeting, Naples, Florida. Title: *A Magnetar Wind Nebula: Is the Spin-down-powered Wind Enough?* 2016
6. Ben Gurion University of the Negev. Title: *A Two-Zone Model for GRB Prompt Emission in Strongly Magnetized Outflows* 2016
7. The Racah Institute of Physics, HUJI. Title: *A Two-Zone Model for GRB Prompt Emission in Strongly Magnetized Outflows* 2015
8. CASCA 2015. McMaster University. Title: *Gamma-ray bursts from strongly magnetized outflows with dissipation from a baryon shell* 2015
9. CITA. Title: *The Spectral States of Black Hole X-Ray Binaries* 2014
10. The Structure and Signals of Neutron Stars: From Birth to Death. Florence. Title: *Statistical Ages and the Cooling Rate of XDINS* 2014
11. CITA. Title: *Models of GRBs* 2014
12. CASCA 2013. Vancouver. Title: *Study of High Energy Processes in Relativistic Plasmas Near Compact Objects* 2013
13. 8th Patras Workshop on Axions, WISPS, WIMPS. Chicago. Title: *Constraints on Axion-Like Particles From Magnetic White Dwarfs* 2012
14. Canadian Workshop on the Nuclear and Astrophysics of Stars. TRIUMF. Title: *Axion Properties from White Dwarf Magnetospheres* 2010
15. Theory Seminar. TRIUMF. Title: *Mystery solved: Cosmic rays from pulsars and magnetars can explain ATIC, H.E.S.S., PAMELA, and Fermi observations* 2010
16. 24th Texas Symposium on Relativistic Astrophysics. Vancouver. Title: *The Birthrate of Magnetars* 2008

Academic Associations

1. Magnetar group led by Prof. Chryssa Kouveliotou (GWU)
2. Fermi-GRB Collaboration
3. eXTP - enhanced X-ray Timing and Polarimetry mission

Computer Skills

1. Linux/Unix, C, Mathematica, Python, Fortran90, Gnuplot, PGFplots

Services

1. Referee for Journals: ApJ, Physical Review B, MNRAS
2. Organized the annual CITA jamboree (2013 - 2014)

References**Prof. Jeremy Heyl**

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University of British Columbia
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Prof. Chris Thompson

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Prof. Ingrid Stairs

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