

Tova M. Yoast-Hull

Canadian Institute for Theoretical Astrophysics
University of Toronto
60 St. George Street
Toronto, ON, M5S 3H8, Canada

Website: www.tovayoasthull.com
Email: yoasthull@cita.utoronto.ca
Cell Phone: (416) 889-8704
Citizenship: United States

RESEARCH INTERESTS

high-energy particle physics & radiative transfer • computational astrophysics & optical spectroscopy
cosmic ray interactions, acceleration, and propagation • radio continuum, γ -rays, neutrinos in galaxies
starbursts, active galactic nuclei, galactic winds • central molecular zones in spiral & lenticular galaxies
star formation theory & feedback processes • galaxy formation and evolution & large-scale simulations

POSITIONS & EDUCATION

POSITIONS

- Canadian Institute for Theoretical Astrophysics** – University of Toronto
Postdoctoral Fellow, Supervisor: Prof. Norman Murray 2016 – 2019
- Wisconsin IceCube Particle Astrophysics Center** – University of Wisconsin
Postdoctoral Researcher, Supervisor: Prof. Francis Halzen 2015 – 2016

EDUCATION

- University of Wisconsin-Madison** – Madison, WI 2009 – 2015
Ph. D. Physics (2015)
Thesis: “Cosmic Rays in Starbursting Galaxies”
Advisers: Profs. Ellen G. Zweibel & John S. Gallagher, III
M. A. Physics (2013)
- Kenyon College** – Gambier, OH 2005 – 2009
B. A. Physics (2009)
Graduated *cum laude*, Minors: Mathematics, Scientific Computing

TEACHING & ADVISING

TEACHING

- Teaching Assistant** – Dept. of Astronomy, University of Wisconsin 2013 – 2014
The Evolving Universe: Stars, Galaxies, & Cosmology (ASTRO 103) – Led discussion sections and created quizzes and worksheets.
- Mentor** – Dept. of Physics & Dept. of Astronomy, University of Wisconsin 2015 – 2016
- Founded and organized program for female graduate students to mentor female undergraduate students.
 - Trained undergraduate students on the WIYN 3.5m telescope at Kitt Peak.
- Lab Course Assistant** – Dept. of Physics, Kenyon College 2007 – 2008
Introduction to Experimental Physics (PHYS 146) – Assisted lab students with problems regarding equipment, experimental procedure, and computer simulations.
- Course Grader** – University of Madison & Kenyon College 2007 – 2013
High Energy Astrophysics, Astronomy: Stars & Galaxies, Modern Physics, Classical Physics, & Introduction of Experimental Physics

ADVISING

- Gunjan Lakhlani** 2017 – 2018
CITA / University of Toronto Graduate Thesis Student,
Co-supervised with Prof. Norm Murray & Dr. Mubdi Rahman
- Yangyang (Eowyn) Liu** 2016
University of Wisconsin Undergraduate Student,
Co-supervised with Prof. J. S. Gallagher

J. Travis Stadle & Shireen Fikree 2016
 University of Wisconsin REU Summer Students,
 Co-supervised with Prof. J. S. Gallagher & Dr. Ralf Kotulla

**AWARDS &
 SUCCESSFUL
 PROPOSALS**

AWARDS & GRANTS

Postdoctoral Fellowship – Canadian Institute for Theoretical Astrophysics 2016
International Travel Grant – American Astronomical Society 2015
Whitford Award for Outstanding Research – Dept. of Astronomy, University of Wisconsin 2014

SUCCESSFUL OBSERVING PROPOSALS

Hubble Space Telescope

“Hearts of Darkness: Compact Obscured Nuclei in S0/a Galaxies” (Co-I) Spring 2016

South African Large Telescope

“Spectroscopic Survey of the Central Molecular Zones of Southern Galaxies” (Co-I) Fall 2017
 “Survey of Stellar & Ionized Gas Properties of Dust-Obscured Nuclei” (Co-I) Spring 2016
 “Spectroscopic Observations of Dark-Hearted S0 Galaxies” (Co-I) Spring 2015

WIYN 3.5m Telescope

“Ionized Gas in the Central Molecular Zones of Early-Type S0 Galaxies” (Co-I) Fall 2016
 “Ionized Gas and the Evolution of Central Molecular Zones in Galaxies” (Co-I) Spring 2016
 “Emission Lines from Central Galactic Zones: Searching for Winds” (Co-I) Fall 2015
 “Blowing Bubbles: The Extended Galactic Winds from ULIRGs” (Co-I) Spring 2015
 “The Astrophysics of the Central Molecular Zone of Spiral Galaxies” (PI) Fall 2014

Giant Metrewave Radio Telescope

“Radio Constraints on Ionized Gas Content of Central Zones of Spirals” (PI) Spring 2014

PUBLICATIONS

REFEREED PUBLICATIONS

Total citations (as of Sep 2018) : 91

Drafts can be supplied for all ‘in prep’ articles upon request.

- [14] “VV 665, Interactions, and the Evolution of the LIRG NGC 4418”
 E. Boettcher, J. S. Gallagher III, Y. Ohyama, E. Varenus, S. Aalto, N. Falstad,
 S. König, K. Sakamoto, & **T. M. Yoast-Hull**
 2018, in preparation
- [13] “Massive Dusty Outflows and the Recent Evolution of the LIRG Zw 049.057”
 J. S. Gallagher III, S. Aalto, L. E. Laufman, **T. M. Yoast-Hull**, N. Falstad, Y. Liu,
 A. Evans, S. König, S. Muller, Y. Ohyama, K. Sakamoto, & M. A. Bershad
 2018, in preparation
- [12] “How Galaxies Drive Turbulence and Star Formation in the Interstellar Medium:
 Insight from the FIRE Simulations”
 G. Lakhani, M. Rahman, N. Murray, & **T. Yoast-Hull**
 2018, in preparation
- [11] “The Structure and Properties of GMCs in the FIRE Simulations”
 G. Lakhani, M. Rahman, L. Keating, **T. Yoast-Hull**, A. Richings, N. Murray,
 A. Wetzel, P. F. Hopkins, D. Kereš, C.-A. Faucher-Giguère, & E. Quataert
 2018, in preparation
- [10] “Breaking the Radio – Gamma-Ray Connection in Arp 220”
T. M. Yoast-Hull & N. Murray
 2018, MNRAS, submitted (July 2018, *second draft in progress*)
- [9] “ γ -Ray Puzzle in Cygnus X: Implications for High-Energy Neutrinos”
T. M. Yoast-Hull, J. S. Gallagher III, F. Halzen, A. Kheirandish, & E. G. Zweibel
[2017, PRD, 96, 043011](#)

- [8] “ γ -Ray Emission from Arp 220: Indications of an Active Galactic Nucleus”
T. M. Yoast-Hull, J. S. Gallagher III, S. Aalto, & E. Varenius
 2017, *MNRAS Letters*, 469, L89
- [7] “Subarcsecond International LOFAR Radio Images of Arp 220 at 150 MHz”
 E. Varenius, J. E. Conway, I. Martí-Vidal, S. Aalto, L. Barcos-Muñoz, S. König,
 M. A. Pérez-Torres, A. T. Deller, J. Moldón, J. S. Gallagher III, **T. M. Yoast-Hull**,
 C. Horellou, L. K. Morabito, A. Alberdi, N. Jackson, R. Beswick, T. D. Carozzi,
 O. Wucknitz, & N. Ramírez-Olivencia
 2016, *A&A*, 593, 86
- [6] “Equipartition and Cosmic Ray Energy Densities in Central Molecular Zones
 of Starbursts” **T. M. Yoast-Hull**, J. S. Gallagher III, & E. G. Zweibel
 2016, *MNRAS Letters*, 457, L29
- [5] “Cosmic Rays, γ -Rays, and Neutrinos in the Starburst Nuclei of Arp 220”
T. M. Yoast-Hull, J. S. Gallagher III, & E. G. Zweibel
 2015, *MNRAS*, 453, 222
- [4] “The Cosmic Ray Population of the Galactic Central Molecular Zone”
T. M. Yoast-Hull, J. S. Gallagher III, & E. G. Zweibel
 2014, *ApJ*, 790, 86
- [3] “Active Galactic Nuclei, Neutrinos, and Interacting Cosmic Rays in NGC 253
 & NGC 1068”
T. M. Yoast-Hull, J. S. Gallagher III, E. G. Zweibel, & J. E. Everett
 2014, *ApJ*, 780, 137
- [2] “Cosmic Ray Sampling of a Clumpy Interstellar Medium”
 E. Boettcher, E. G. Zweibel, **T. M. Yoast-Hull**, & J. S. Gallagher III
 2013, *ApJ*, 779, 12
- [1] “Winds, Clumps, and Interacting Cosmic Rays in M82”
T. M. Yoast-Hull, J. E. Everett, J. S. Gallagher III, & E. G. Zweibel
 2013, *ApJ*, 768, 53

CONFERENCE PROCEEDINGS

- [4] “Gamma-Ray & Cosmic Ray Escape in Intensely Star-Forming Systems,”
T. M. Yoast-Hull, J. S. Gallagher III, & E. G. Zweibel
 2015, *34th International Cosmic Ray Conference*
- [3] “The Galactic Center: A Laboratory for Starburst Galaxies?”
T. M. Yoast-Hull, J. S. Gallagher III, & E. G. Zweibel
 2014, *IAU Symposium*, 303, 153
- [2] “Lessons from Comparisons between the Nuclear Region of the Milky Way
 & Those in Nearby Spirals”
 J. S. Gallagher III, **T. M. Yoast-Hull**, & E. G. Zweibel
 2014, *IAU Symposium*, 303, 61
- [1] “Cosmic Ray Production and Emission in M82”
T. Yoast-Hull, J. Everett, J. S. Gallagher, & E. Zweibel
 2012, *IAU Symposium*, 284, 397

PROFESSIONAL SERVICE & OUTREACH

SERVICE

- Convener** for “Extragalactic Science” – TeVPA 2018, Berlin, Germany 2018
- Reviewer** for NASA Proposals 2017 – 2018
Fermi Cycle 11
 Astrophysical Data Analysis Program
- Founder & Organizer** of *Society of Women and Gender Minorities in Physics* 2015 – 2016
- Member** of *Women of Wisconsin Strengthening Astronomy (WOWSA)* 2010 – 2016

	Journal Referee	since 2015
	Astrophysical Journal	
	Monthly Notices of the Royal Astronomical Society	
	Co-Organizer of Joint IceCube-Astronomy Seminars – University of Wisconsin	2014 – 2016
	Student Representative on Faculty Search Committee – Kenyon College	2008 – 2009
	OUTREACH	
	Universe in the Park – University of Wisconsin	2014 – 2015
	Expanding Your Horizons – University of Wisconsin	2013 – 2015
WORKSHOPS & SKILLS	WORKSHOPS	
	14th Synthesis Imaging Workshop – National Radio Astronomy Observatory	2014
	1st MERCUR School on Plasma-Astroparticle Physics – Ruhr-Universität Bochum	2014
	Summer School in Statistics for Astronomers VIII – Pennsylvania State University	2013
	2012 Fermi Summer School – University of Delaware	2012
	SKILLS	
	Programming	
	Languages: C/C++, Python, Java, IDL, LaTeX	
	Packages / Libraries: multithreading, MPI, OpenMP	
	Scientific Codes / Software: IRAF, Fermi Science Tools, Mathematica	
	Languages	
	French – intermediate reading & conversation	
	German – beginner reading & conversation	
PRESENTATIONS	INVITED TALKS & SEMINARS	
	[19] Seminar at University of Wisconsin-Madison Madison, WI, USA	May 2018
	[18] Invited Talk at the High Energy Universe Workshop, Munich Institute for Astro- and Particle Physics (MIAPP), Munich, Germany	Mar 2018
	[17] Invited Talk at the 4th Cosmic Ray Anisotropy Workshop, Guadalajara, Mexico	Oct 2017
	[16] Invited Talk at Modes of Star Formation Workshop, Aspen, CO, USA	Sep 2017
	[15] Invited Talk at the RAPP Center Inauguration, Ruhr Astroparticle and Plasma Physics (RAPP) Center, Bochum, Germany	Sep 2016
	[14] Invited Talk at CHANG-ES Workshop 2016, Madison, WI, USA	Jul 2016
	[13] Invited Talk at the First Neutrino Point Source Workshop, Drexel University, Philadelphia, PA, USA	Jun 2016
	[12] Seminar at UW River Falls River Falls, WI, USA	Mar 2016
	[11] Seminar at Chalmers University of Technology, Gothenburg, Sweden	Jun 2015
	[10] Invited Talk at Midwest Magnetic Fields Workshop, Madison, WI, USA	May 2015

- [9] Seminar at University of Minnesota,
Minneapolis, MN, USA Mar 2015
- [8] Seminar at Los Alamos National Laboratory,
Los Alamos, NM, USA Feb 2015
- [7] Seminar at Ruhr-Universität Bochum,
Bochum, Germany Nov 2014
- [6] Seminar at Max-Planck-Institut für Kernphysik,
Heidelberg, Germany Nov 2014
- [5] Seminar at The Ohio State University,
Columbus, OH, USA Aug 2014
- [4] Invited Talk at Midwest Magnetic Fields Workshop,
Madison, WI, USA May 2014
- [3] Seminar at Onsala Space Observatory, Apr 2014
Onsala, Sweden
- [2] Invited Talk at Midwest Magnetic Fields Workshop,
Madison, WI, USA May 2013
- [1] Seminar at Ruhr-Universität Bochum,
Bochum, Germany Apr 2012

CONTRIBUTED PRESENTATIONS

- [15] Contributed Talk at IAU Symposium 341,
Osaka, Japan Nov 2018
- [14] Contributed Talk at TeVPA 2018,
Berlin, Germany Aug 2018
- [13] Contributed Talk at TeVPA 2017,
Columbus, OH, USA Aug 2017
- [12] Contributed Talk at IceCube Collaboration Meeting,
Stony Brook, NY, USA Apr 2016
- [11] Contributed Talk at AAS Meeting 227,
Orlando, FL, USA Jan 2016
- [10] Poster at the International Cosmic Ray Conference 2015,
The Hague, Netherlands Aug 2015
- [9] Contributed Talk at Galaxies of Many Colours Workshop,
Marstrand, Sweden Jun 2015
- [8] Contributed Talk at IceCube Particle Astrophysics Symposium 2015,
Madison, WI, USA May 2015
- [7] Contributed Talk at AAS Meeting 225,
Seattle, WA, USA Jan 2015
- [6] Poster at the 14th High Energy Astrophysics Divisional Meeting,
Chicago, IL, USA Aug 2014
- [5] Poster at IAU Symposium 303,
Santa Fe, NM, USA Oct 2013
- [4] Poster at AAS Meeting 221,
Long Beach, CA, USA Jan 2013
- [3] Poster at AAS Meeting 220,
Anchorage, AK, USA Jun 2012
- [2] Poster at IAU Symposium 284,
Preston, United Kingdom Sep 2011
- [1] Poster at AAS Meeting 217,
Seattle, WA, USA Jan 2011

REFERENCES**Prof. Ellen G. Zweibel**

Departments of Astronomy & Physics
University of Wisconsin-Madison
Email: zweibel@astro.wisc.edu
Phone: (608) 262-7921

Prof. John S. Gallagher

Department of Astronomy
University of Wisconsin-Madison
Email: jsg@astro.wisc.edu
Phone: (608) 263-2456

Prof. Norman Murray

Department of Physics
University of Toronto
Email: murray@cita.utoronto.ca
Phone: (416) 978-1778

Prof. Francis Halzen

Department of Physics
University of Wisconsin-Madison
Email: francis.halzen@icecube.wisc.edu
Phone: (608) 262-2667