Eric W. Koch
Curriculum Vitæ

Center for Astrophysics, Harvard & Smithsonian
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Education

2016-2020 *University of Alberta*
PhD. (Physics)
Thesis: "Connecting galactic to local scales in the neutral interstellar medium across the Local Group"
Adviser: Prof. Erik Rosolowsky

2014-2016 *University of Alberta*
MSc. (Physics)
Thesis: "The Atomic Interstellar Medium in M33"
Adviser: Prof. Erik Rosolowsky

2010-2014 *University of British Columbia*
Hon. BSc. (Physics)

Employment

2020–present *Center for Astrophysics Harvard & Smithsonian*
Submillimeter Array Postdoctoral Fellow

2014–2020 *University of Alberta*
Graduate Research and Teaching Assistant

2013-2014 *University of British Columbia, Okanagan*
Undergraduate Research Assistant with Prof. Jason Loeppky

2012 *University of British Columbia, Okanagan*
Undergraduate Work-Study Program with Prof. Erik Rosolowsky

2011-2014 *University of British Columbia, Okanagan*
Undergraduate Teaching Assistant

Awards

2020 *University of Alberta*
Alberta Graduate Excellence Scholarship

2019 *University of Alberta*
Andrew Stewart Memorial Graduate Prize

2019 *University of Alberta/The Ohio State University*
Natural Sciences and Engineering Research Council of Canada Michael Smith Foreign Study Supplements with Prof. Adam Leroy

2018 *University of Alberta*
Queen Elizabeth II Graduate Scholarship - Doctorate

2017-2019 *University of Alberta*
Natural Sciences and Engineering Research Council of Canada Alexander Graham Bell Canada Graduate Scholarship - Doctorate

2016 *University of Alberta*
Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship - Doctorate

2015 *University of Alberta*
Queen Elizabeth II Graduate Scholarship - Masters

2010-2014 *University of British Columbia, Okanagan*
Deputy Vice Chancellor Scholarship

2014 *University of British Columbia, Okanagan*
Distinguished Graduate Award - Physics, Math, Statistics & Computer Science

2014 *University of Alberta*
Natural Sciences and Engineering Research Council of Canada Alexander Graham Bell Canada Graduate Scholarship - Masters

2013 *University of Alberta*
Natural Sciences and Engineering Research Council of Canada Undergraduate Summer Research Award with Prof. Craig Heinke

2013 *University of British Columbia, Okanagan*
Top Oral Presenter - UBC-O Undergraduate Research Conference

2013 *University of British Columbia, Okanagan*
Upper Year Physics Award

2012 *University of British Columbia, Okanagan*
Natural Sciences and Engineering Research Council of Canada Undergraduate Summer Research Award with Prof. Erik Rosolowsky

2010 *University of British Columbia, Okanagan*
President's Entrance Scholarship

External Funding

2019 **co-I** - *Link CASA to the astropy ecosystem*
ALMA Development Study - Cycle 7 (PI: A. Ginsburg)
$199,905 USD

Professional Talks — Invited

2021 April *Tsinghau University Colloquium (remote)*
2021 March *University of Connecticut Astronomy Seminar (remote)*
2020 July *University of Florida Colloquium (remote)*
2020 July *Michigan State University Astronomy Seminar (remote)*
2019 January *Big Apple Magnetic Fields Workshop, New York*

Professional Talks — Other

2021 March *A precursor view of the SKA sky*
2020 December *Harvard-Heidelburg Star Formation Workshop*
2019 September *So-Star, Paris, France*
2019 April *Center for Astrophysics, Cambridge, USA*
2019 April *Green Bank Telescope, Green Bank, USA*
2019 March *NRAO, Charlottesville, USA*
2019 March *University of Texas, Austin, USA*
2018 August *CHANG-ES Team Meeting, Calgary, Canada*
2018 July *PHAT/M33 Team Meeting, Ringberg, Germany*
2018 May *Olympian Symposium, Paralia Katerini, Greece*
2017 June *Canadian Astronomical Society Meeting, Edmonton, Canada*
2016 August *Lorentz Centre - Apples to Apples Workshop: Comparing Simulations \& Observations*
2016 February *Max Planck Institute for Extraterrestrial Physics*
2016 February *Max Planck Institute for Radio Astronomy*
2015 May *Florence Comparing Simulations \& Observations Workshop*
2014 April *UBC-O Undergraduate Research Conference*
2013 November *UBC-O Brown Bag Series*
2013 April *UBC-O Undergraduate Research Conference*

Research Advising

Summer 2021	*Resolving the radio continuum in the giant* HII *region NGC 604* Hailey Moore (MSU; advised with Laura Chomiuk) Graduate research project
Summer 2021	*Resolved molecular filaments in M33* Noa Choi (Harvard, advised with Alyssa Goodman & Catherine Zucker) Harvard College Research Program
Summer 2021	*Tracing feedback-driven outflows in Sextans A* Wasiim Ouro-Sama (UMass) CfA Latino Initiative Program
Summer 2020	*Using multi-dimensional graphs to describe filamentary networks* Sam Fielder (UAlberta; advised with Erik Rosolowsky) Undergraduate Physics research
Summer 2018	*Interpreting filaments in three dimensions* Dewanshu Haswani (advised with Erik Rosolowsky) MITACS Internship at UAlberta
Fall 2018	*Spiral Arm Propagation in M33 and its Implications on Molecular Cloud Formation* Steffen Senchyna (UAlberta; advised with Erik Rosolowsky) Physics Honours Research Project
Fall 2018	*ISM Properties near Supernova Remnants in M33* Weizhuo Zhang (UAlberta; advised with Erik Rosolowsky) Physics Honours Research Project

Observing Experience (as PI)

2021	*A resolved molecular gas survey of the edge-on galaxy NGC 891* Submillimeter Array — 41 hr
2021	*Resolving the molecular gas fuelling IC 10's starburst on 2.5 pc scales* Submillimeter Array — 35 hr
2021	*Completion of Dense Gas Formation through a Spiral Arm* Green Bank Telescope — 12 hr
2019	*Tracing accretion onto a YMC progenitor candidate in M33* ALMA — 5 hr
2019	*Dense Gas Formation through a Spiral Arm* Green Bank Telescope — 41 hr
2017	*Tracing the CNM and Feedback-driven holes across a Galactic Disk* Very Large Array — 84 hr
2016	*Feedback in a Giant HII Region: Impact on the Atomic and Molecular Medium* Very Large Array — 48 hr
2016	*Tracing the Atomic and Molecular Medium Across a Spiral Arm* Very Large Array — 48 hr

Observing Experience (as co-I)

2021	*The Beautiful and Enigmatic Spiral Galaxy NGC 7331* Submillimeter Array — PI: Glen Petitpas — 18 hr
2020	*A JWST-HST-VLT/MUSE-ALMA Treasury of Star Formation in Nearby Galaxies* JWST — PI: Janice Lee — 107 hr
2020	*The First Resolved View of Individual Star Formation Across a Spiral Arm* JWST — PI: Erik Rosolowsky — 23 hr
2020	*A Complete Picture of Gas, Dust, and Stars in Six of the Best-Studied MeerKAT-Visible Galaxies* MeerKAT — PI: Dyas Utomo — 48 hr
2019	*Turbulence in Central Molecular Zone clouds* Very Large Array — PI: Jonathan Henshaw — 24 hr

2019	*Surveying Triangulum with the ACA: A Key Perspective on Molecular Clouds at High Resolution* ALMA — PI: Erik Rosolowsky — 17 hr
2019	*Testing Accretion-Driven Turbulence in Central Molecular Zone Clouds* Green Bank Telescope — PI: Jonathan Henshaw — 2.5 hr
2019	*A VLA Local Group Legacy Survey - X-Proposal* Very Large Array — PI: Adam Leroy — 1700 hr
2017	*Resolving the Cloud-Cluster Ecosystem in M33* ALMA — PI: Erik Rosolowsky — 22 hr
2015	*Tracing Cloud Formation in a Spiral Arm* NOEMA — PI: Jonathan Braine, Erik Rosolowsky — 16 hr

Professional Service

2021	LOC for the 2021 SMA Interferometry School
2018-Present	Referee for MNRAS, A&A, ApJ
2017-2019	Seminar and journal club organizer for UAlberta Astronomy Group
2017-2020	Student Member of Canadian Astronomical Society (CASCA)
2017	UAlberta Graduate Teaching and Learning Level 1 Certificate – 14 hr of workshops
2016-2017	UAlberta representative on the Canadian Astronomical Society Graduate Student Committee
2013-2014	UBC-Okanagan Physics representative on Quantitative Sciences Course Union Council

Software

I actively develop several python software packages for astronomical analyses. Below is a selection of my primary projects, and a full list is available on my github profile (github.com/e-koch).

- `TurbuStat` (https://turbustat.readthedocs.io): A common implementation of many observational turbulence statistics. (Koch et al. 2019).
- `FilFinder` (https://fil-finder.readthedocs.io): Morphological-based filament detection algorithm (Koch & Rosolowsky 2015).
- `spectral-cube` (https://spectral-cube.readthedocs.io): A library for operations on radio spectral-line data cubes, including handling for massive data (DOI: 10.5281/zenodo.2573901).

Teaching

2014-2018	*University of Alberta* Teaching Assistant for six Engineering Physics labs; Marker for 300 level Astronomy courses
2011-2013	*University of British Columbia, Okanagan* Teaching Assistant for eight 100 and 200 level Physics labs; Marker for three 100 level Physics & Astronomy courses

Outreach

2020 November	Astronomy Research Stories Cronyn Observatory Virtual Public Night
2019 October	Judge for NASA/CSA Space Apps Challenge Edmonton, Canada
2019 May	Frigid Fuel for Star Formation Pint of Science, Edmonton, Canada
2018 December	Unravelling Star Formation Royal Astronomical Society of Canada (Edmonton Centre)
2018 May	Viewing the Sky with Radio Interferometry Northern Alberta Radio Club (Edmonton)
2017 February	Blowing Bubbles in a Galaxy University of Alberta Observatory Public Observing Night
2016–2019	Over 100 Public Observing and Astronomy presentations for School & Community Groups University of Alberta Observatory