

CURRICULUM VITAE
Ashkbiz Danehkar

University of Michigan
Department of Astronomy
1085 S. University, 311 WH
Ann Arbor, MI 48109

Email: danehkar@umich.edu
Phone: +1 (617) 955-0606
Web: sites.lsa.umich.edu/danehkar
Publications: SAO/NASA ADS

EDUCATION

Ph.D. Physics and Astronomy, Macquarie University, Sydney, Australia 2014
M.Sc. Plasma Physics (with distinction), Queen's University Belfast, UK 2009
M.Sc. Computational Science and Engineering, University of Rostock, Germany 2007

RESEARCH INTERESTS

- AGN and Galaxy Evolution
- Theoretical Plasma Physics
- Nebular Astrophysics
- Gravitational Physics

PROFESSIONAL HISTORY

Research Fellow, University of Michigan, Ann Arbor, MI, USA 01/2019–present
Department of Astronomy

- Performed 3D hydrodynamic simulations to model stellar superwinds.

Teaching Assistant, MIT Physics, Cambridge, MA, USA 09/2018–12/2018
Department of Physics

- Provided assistant in the course 8.871, Holographic Duality.

Postdoctoral Fellow, Harvard–Smithsonian Center for Astrophysics, Cambridge, MA, USA 09/2015–08/2018
High Energy Astrophysics Division

- Analyzed X-ray observations of quasars with *Chandra*, *XMM-Newton* and *NuSTAR*.
- Performed X-ray spectral analysis to characterize ultra-fast outflows in AGN.
- Studied physics of accretion flows around supermassive black holes.

AWARDS & HONORS

Symmetry Outstanding Reviewer Award 2018
Astronomical Society of Australia Travel Assistance 2014
Sigma Xi Grants-in-Aid of Research (GIAR) 2013
International Astronomical Union Travel Grants 2011
International Macquarie University Research Excellence Scholarship 2010–2013
Northern Ireland, Department for Employment and Learning Studentship 2008–2009
Marie Curie Early Stage Researcher (MRTN-CT-2004-005104) 2007–2008

TEACHING EXPERIENCE

University of Michigan, Department of Astronomy Ann Arbor, MI, USA
Mentor, Undergraduate Research Opportunity Program (UROP) Fall-2019
Mentor a student on a research project related to nebular astrophysics
Massachusetts Institute of Technology, Department of Physics Cambridge, MA, USA
Teaching Assistant, Postgraduate Course Fall-2018
Provided assistants in the course “Holographic Duality” (PHY 8.871; Prof. Hong Liu)
Macquarie University, Department of Physics and Astronomy Sydney, Australia
Teaching Assistant, Undergraduate Physics Laboratory and Astronomy 2010–2012
Lab Demonstrator for physics and astronomy courses

SUCCESSFUL PROPOSALS & GRANTS

- (PI) NSF XSEDE (STAMPEDE, 20 kSU, 2016)
- (Co-I) AAT Telescope (3.9 hours, 2013)
- (PI) NCI National Facility (250 kSU, 2014)
- (PI) ANU Telescope (4 nights, 2012)
- (Co-I) NCI National Facility (450 kSU, 2012)
- (PI) ANU Telescope (4 nights, 2012)

PROFESSIONAL MEMBERSHIPS

American Astronomical Society, <i>Full Member</i>	2015–present
International Astronomical Union, <i>Member</i>	2018–present
<i>Lynx</i> Science Working Groups (Member: <i>Physics of Feedback, Evolution of Structure</i>)	2016–present
American Physical Society, <i>Member</i>	2017–present
Astronomical Society of Australia, <i>Member</i>	2011–present
Sigma Xi Scientific Research Society, <i>Full Member</i>	2010–present

SEMINAR & CONFERENCE PRESENTATIONS

Oral Presentations

<i>29th Midwest Relativity Meeting</i> , Grand Valley State University, Grand Rapids, MI	2019
<i>New Post-Doc Colloquium</i> , University of Michigan, Ann Arbor, MI	2019
<i>Galaxy Group Meeting</i> , University of Michigan, Ann Arbor, MI	2019
<i>New England Regional Quasar and AGN Meeting</i> , Boston University, MA	2017
<i>CfA Postdoc Symposium</i> , Harvard CfA, Cambridge, MA	2016
<i>High Energy Phenomena Seminar</i> , Harvard CfA, Cambridge, MA	2016
<i>HEA Group Meeting</i> , MIT Kavli Institute, Cambridge, MA	2015
<i>CfA Postdoc Symposium</i> , Harvard CfA, Cambridge, MA	2015
<i>12th Asia-Pacific Regional IAU Meeting</i> , Daejeon, Korea, MA	2014
<i>MQ AAAS Astro Workshop</i> , Macquarie University, Sydney, Australia	2011
<i>MQ Astroseminar</i> , Macquarie University, Sydney, Australia	2011

Poster Presentations

<i>AAS Winter 231st Meeting</i> , Washington, DC, USA	2018
<i>From Chandra to Lynx</i> , Harvard University, MA	2017
<i>IAU Symposium 312</i> , Beijing, China	2014
<i>IEEE ICOPS/BEAMS</i> , Washington, DC	2014
<i>IAU Symposium 283</i> , Puerto de la Cruz, Tenerife, Spain	2011
<i>IAU Symposium 282</i> , Tatranská Lomnica, Slovakia	2011
<i>IAU Symposium 281</i> , Padova, Italy	2011
<i>ICPDP6</i> , Garmisch-Partenkirchen, Germany	2011

PROFESSIONAL SERVICE

Referee Service (publons.com/a/843927)

ApJ, AJ, Ap&SS, Phys. Plasmas, Mod.Phys.Lett.A, J. Geophys. Res, & other journals

Editorial Service

Front.in Phys.: Guest Associate Editor

Review Panel Service

NASA Postdoctoral Program (NPP 2019): Reviewer

NASA's Astrophysics Data Analysis Program (ADAP 2017, 2019): Review Panelist

Computing Service (github.com/danehkar)

MPI_XSTAR: MPI-based Parallelization of XSTAR Photoionization Program

AtomNeb: IDL Library for Atomic Data of Ionized Nebulae

proEQUIB: IDL Library for Plasma Diagnostics and Abundance Analysis

REFEREED PUBLICATIONS

Number of peer-reviewed publications: 21 of which 16 as first-author, *h*-index: 9

First Author (Refereed)

21. **Danehkar, A.**, Nowak, M. A., Lee, J. C., Kriss, G. A., Young, A. J., Hardcastle, M. J., Chakravorty, S., Fang, T., Neilsen, J., Rahoui, F., and Smith, R. K. 2018. *The Ultra-fast Outflow of the Quasar PG 1211+143 as Viewed by Time-averaged Chandra Grating Spectroscopy*, *ApJ*, 853, 165. doi:10.3847/1538-4357/aaa427
20. **Danehkar, A.**, Nowak, M. A., Lee, J. C., and Smith, R. K. 2018. *MPI_XSTAR: MPI-based parallelization of the XSTAR photoionization program*, *PASP*, 130, 024501. doi:10.1088/1538-3873/aa9dff
19. **Danehkar, A.**, Karovska, M., Maksym, W. P., and Montez Jr, R. 2018. *Mapping Excitation in the Inner Regions of the Planetary Nebula NGC 5189 Using HST WFC3 Imaging*, *ApJ*, 852, 87. doi:10.3847/1538-4357/aa9e8c
18. **Danehkar, A.**, Q. A. Parker, and W. Steffen. 2016. *Fast, low-ionization emission regions of the planetary nebula M2-42*, *AJ*, 151, 38. doi:10.3847/0004-6256/151/2/38

17. **Danehkar, A.**, and Parker, Q. A. 2015. *Spatially resolved kinematic observations of the planetary nebulae Hen 3-1333 and Hen 2-113*, *MNRAS:Letters*, 449, L56–L59. doi:10.1093/mnrasl/slv022
16. **Danehkar, A.**, Todt, H., Ercolano, B., and Kniazev, A. Y. 2014. *Observations and three-dimensional photoionization modelling of the Wolf–Rayet planetary nebula Abell 48*, *MNRAS*, 439, 3605–3615. doi:10.1093/mnras/stu203
15. **Danehkar, A.**, Parker, Q. A., and Ercolano, B. 2013. *Observations and three-dimensional ionization structure of the planetary nebula SuWt 2*, *MNRAS*, 434, 1513–1530. doi:10.1093/mnras/stt1116
14. **Danehkar, A.**, Saini, N. S., Hellberg, M. A., and Kourakis. I. 2011. *Electron-acoustic solitary waves in the presence of a suprathermal electron component*, *Phys. Plasmas*, 18, 072902. doi:10.1063/1.3606365

Sole Author (Refereed)

13. **Danehkar, A.** 2019. *Electric-magnetic duality in gravity and higher-spin fields*, *Front.in Phys.*, 6, 146. doi:10.3389/fphy.2018.00146
12. **Danehkar, A.** 2018. *Electron beam-plasma interaction and electron-acoustic solitary waves in a plasma with suprathermal electrons*, *Plasma Phys. Control. Fusion*, 60, 065010. doi:10.1088/1361-6587/aabc40
11. **Danehkar, A.** 2018. *Bi-Abundance Ionisation Structure of the Wolf–Rayet Planetary Nebula PB 8*, *PASA*, 35, e005. doi:10.1017/pasa.2018.1
10. **Danehkar, A.** 2017. *Electrostatic solitary waves in an electron-positron pair plasma with suprathermal electrons*, *Phys. Plasmas*, 24, 102905. doi:10.1063/1.5000873
9. **Danehkar, A.** 2015. *Discovery of collimated bipolar outflows in the planetary nebula Th 2-A*, *ApJ*, 815, 35. doi:10.1088/0004-637X/815/1/35
8. **Danehkar, A.** 2009. *On the significance of the Weyl curvature in a relativistic cosmological model*, *Mod. Phys. Lett. A*, 24, 3113–3127. doi:10.1142/S0217732309032046

Contributing Author (Refereed)

7. Boissay-Malaquin, R., **Danehkar, A.**, Marshall, H. L., Nowak, M. A. 2019. *Relativistic Components of the Ultra-fast Outflow in the Quasar PDS 456 from Chandra/HETGS, NuSTAR, and XMM-Newton Observations*, *ApJ*, 873, 29. doi:10.3847/1538-4357/ab0082
6. Kriss, G. A., Lee, J. C., and **Danehkar, A.** 2018. *A Search for H I Ly α Counterparts to Ultra-fast X-ray Outflows*, *ApJ*, 859, 94. doi:10.3847/1538-4357/aabf38
5. Kriss, G. A., Lee, J. C., **Danehkar, A.**, Nowak, M. A., Fang, T., Hardcastle, M. J., Neilsen, J., and Young, A. J. 2018. *Discovery of an Ultraviolet Counterpart to an Ultra-fast X-ray Outflow in the Quasar PG 1211+143*, *ApJ*, 853, 166. doi:10.3847/1538-4357/aaa42b
4. Frew, D. J., Bojicic, I. S., Parker, Q. A., Stupar, M., Wachter, S., DePew, K., **Danehkar, A.**, Fitzgerald, M. T., and Douchin, D. 2014. *The planetary nebula Abell 48 and its [WN] nucleus*, *MNRAS*, 440, 1345–1364. doi:10.1093/mnras/stu198
3. Bizdadea, C., Cioroianu, E. M., **Danehkar, A.**, Iordache, M., Saliu, S. O., and Sararu, S. C. 2009. *Consistent interactions of dual linearized gravity in $D = 5$: couplings with a topological BF model*, *Eur. Phys. J. C*, 63, 491–519. doi:10.1140/epjc/s10052-009-1105-0

Book Review (Refereed)

2. **Danehkar, A.** 2019. *Book Review: Holographic Entanglement Entropy*, *Front.in Phys.*, 7, 121. doi:10.3389/fphy.2019.00121
1. **Danehkar, A.** 2018. *Book Review: Gauge/Gravity Duality: Foundations and Applications*, *Front.in Phys.*, 6, 82. doi:10.3389/fphy.2018.00082

COMPUTING

2. **Danehkar, A.** 2019. *AtomNeb: IDL Library for Atomic Data of Ionized Nebulae*, *J. Open Source Softw.*, 4, 898. doi:10.21105/joss.00898
1. **Danehkar, A.** 2018. *proEQUIB: IDL Library for Plasma Diagnostics and Abundance Analysis*, *J. Open Source Softw.*, 3, 899. doi:10.21105/joss.00899

7. Nowak, M., **Danehkar, A.**, Kriss, G. A., Lee, J. C., Smith, R. K., and Neilsen, J. 2017. *The Ultra-fast Outflows of PG 1211+143*, In: *American Astronomical Society*, HEAD Meeting 16, 200.03. ads:2017HEAD...1620003N
6. **Danehkar, A.**, and Parker, Q. A. 2016. *Orientation of Galactic Bulge Planetary Nebulae toward the Galactic Center*, In: *Proceedings of the IAU Symposium 312: Star Clusters and Black Holes in Galaxies across Cosmic Time*, 312, 128–130. doi:10.1017/S1743921315007681
5. **Danehkar, A.**, Steffen, W., and Parker, Q. A. 2015. *Kinematical Properties of Planetary Nebulae with WR-type Nuclei*, *Publ.Korean Astron.Soc.* 30, 163–167. doi:10.5303/PKAS.2015.30.2.163
4. **Danehkar, A.**, Kourakis, I. and Hellberg, M. A. 2014. *Electron-acoustic solitons in an electron-beam plasma system with kappa-distributed electrons*, In: *Plasma Sciences (ICOPS), IEEE 41st International Conference on High-Power Particle Beams (BEAMS)*, Id. 7012747. doi:10.1109/PLASMA.2014.7012747
3. **Danehkar, A.**, Frew, D. J., Parker, Q. A., and De Marco. O. 2012. *Photoionization models of the Eskimo nebula: evidence for a binary central star?*, In: *Proceedings of the IAU Symposium: From Interacting Binaries to Exoplanets, Essential Modeling Tools*, 282, 470–471. doi:10.1017/S1743921311028134
2. Saini, N.S., **Danehkar, A.**, Hellberg, M. A., and Kourakis, I. 2011. *Large-amplitude electron-acoustic solitons in a dusty plasma with kappa-distributed electrons*, In: *Proceedings of the 6th International Conference on the Physics of Dusty Plasmas, AIP Conf.Proc.*, 1397, 357–358. doi:10.1063/1.3659841
1. Bizdadea, C., Cioroianu, E.M., **Danehkar, A.**, Iordache, M., Saliu, S.O., and Sararu, S.C. 2009. *BF Models in Dual Formulations of Linearized Gravity*, In: *Proceedings of the Physics Conference TIM-08, AIP Conf.Proc.*, 1131, 29–35. doi:10.1063/1.3153449

REFERENCES

Available Upon Request.