

Biographical Sketch - Varsha P. Kulkarni

Professional Preparation:

- Univ. of Chicago, Astronomy & Astrophysics, M.S., 1990
- Univ. of Chicago, Astronomy & Astrophysics, Ph.D., 1996
- Univ. of Arizona, NICMOS Postdoctoral Fellow, Quasar Absorption Systems, 1996-1999

Appointments:

- Professor: U. of S. Carolina, Dept. of Physics & Astronomy, 8/2010-present
- Interim Dept. Chair: U. of S. Carolina, Dept. of Physics & Astronomy, 7/2012-6/2013
- Associate Professor: U. of S. Carolina, Dept. of Physics & Astronomy, 8/2005-7/2010
- Assistant Professor: U. of S. Carolina, Dept. of Physics & Astronomy, 8/2000-7/2005
- Assistant Professor: Clemson U., Dept. of Physics & Astronomy, 8/1999-8/2000
- Research Associate: U. of Arizona, Steward Observatory, 9/1996-8/1999
- AURA Predoctoral Fellow: Space Tel. Sci. Inst., 1992-1996 (visiting from U. Chicago)
- McCormick Fellow/ Graduate Research/Teaching Assistant: U. of Chicago, 1989-1996

Research Areas:

- Extragalactic Astrophysics (Optical, Infrared, Ultraviolet), Galaxy Evolution
- Intergalactic Medium, Interstellar Medium, Evolution of Chemical Elements
- Dust in Nearby and Distant Galaxies, Atomic Physics for Astrophysics

Selected Research Highlights:

- Approx. 160 papers, review articles, conference proceedings, and abstracts
- Over 200 research talks at conferences and institutions in 11 countries
- Research funding from NSF and/or NASA (2002-present)
- PI of 27 NASA/NSF research grants
- Breakthrough Leadership in Research Award, University of South Carolina, 2019

Selected Recent Publications:

- “*Early metal enrichment of gas-rich galaxies at $z\sim 5$* ”, Poudel, S., Kulkarni, V. P., Morrison, S., Péroux, C., Som, D., Rahmani, H., & Quiret, S. 2018, MNRAS, 473, 3559
- “*Characterizing the circum-galactic medium of damped Lyman- α absorbing galaxies*”, Augustin, R., Péroux, C., Moller, P., Kulkarni, V., Rahmani, H., Milliard, B., Pieri, M., York, D. G., Vladilo, G., Aller, M., & Zwaan, M. 2018, MNRAS, 478, 3120
- “*Atomic Data Revisions for Transitions Relevant to Observations of Interstellar, Circum-galactic, and Intergalactic Matter*”, Cashman, F. H., Kulkarni, V. P., Kisielius, R., Ferland, G. J., & Bogdanovich, P. 2017, ApJS, 230, 8
- “*Probing the Interstellar Dust in Galaxies over >10 Gyr of Cosmic History*”, Kulkarni, V. P., Aller, M. C., York, D. G., Welty, D. E., Vladilo, G., & Som, D. 2016, Planetary & Space Sci., 133, 7 (invited review article)
- “*A SINFONI integral field spectroscopy survey for galaxy counterparts to damped Lyman- α systems - VI. Metallicity and geometry as gas flow probes*”, Péroux, C., Quiret, S., Rahmani, H., Kulkarni, V. P., Epinat, B., Milliard, Bruno, Straka, L. A., York, D. G., Rahmati, A., & Contini, T. 2016, MNRAS, 457, 903

- “*Hubble Space Telescope Observations of Sub-damped Ly- α Absorbers at $z < 0.5$, and Implications for Galaxy Chemical Evolution*”, Som, D., Kulkarni, V. P., Meiring, J., York, D. G., Péroux, C., Lauroesch, J. T., Aller, M. C., & Khare, P. 2015, ApJ, 806, 25

A Few Other Significant Publications:

- “*Element Abundances at high redshift: MIKE observations of sub-damped Lyman α absorbers at $1.7 < z < 2.4$* ”, Som, D., Kulkarni, V. P., Meiring, J., York, D. G., Péroux, C., Khare, P., & Lauroesch, J. T. 2013, MNRAS, 435, 1469
- “*The Role of Sub-DLA Absorbers in the Cosmic Evolution of Metals*”, Kulkarni, V. P., Khare, P., Péroux, C., York, D. G., Lauroesch, J. T., & Meiring, J. D. 2007, ApJ, 661, 88
- “*9.7 μm Silicate Absorption in a Damped Ly- α Absorber at $z = 0.52$* ”, Kulkarni, V. P., York, D. G., Vladilo, G., & Welty, D. E. 2007, ApJ, 663, L81
- “*Average Extinction Curves and Relative Abundances for QSO Absorption Line Systems at $1 \leq z < 2$* ”, York, D., G. et al. 2006, MNRAS, 367, 945
- “*HST Observations of Element Abundances in Low-redshift Damped Ly- α Galaxies and Potential Implications for the Global Metallicity-redshift Relation*”, Kulkarni, V. P., Fall, S. M., Lauroesch, J. York, D. G., Welty, D., Khare, P., & Truran, J. W. 2005, ApJ, 618, 68

Courses Developed and/or Taught:

- Undergraduate: Introductory Astronomy, Introductory Physics (E&M/Optics), Astronomy for Physicists, Introduction to Astrophysics, Advanced Observational Astronomy
- Graduate: Principles of Astrophysics, Extragalactic Astrophysics, Interstellar and Inter-galactic Matter, Properties and Evolution of Galaxies

Synergistic Activities:

- Life-member and past President (2012-2013), Southern Atlantic Coast Sec. of the Amer. Assoc. of Physics Teachers (SACS-AAPT); Organizer of Fall 2012 SACS-AAPT meeting.
- Founded the annual Meeting of Astronomers in South Carolina (now in its 15th year) to foster statewide research collaborations. Organized/co-organized 4 of these meetings.
- Invited Reviewer for many NASA, NSF, NOAO panels (including Panel Chair for NOAO).
- Research supervisor for NSF REU students (2014-2016) and high school students (2017-present); Research advisor for NASA/ MU-SPIN’s Undergraduate Research Program in Astrophysics, a summer program for nationally selected minority students (run by SCSU).
- Advisory Committee for Observatory-Planetarium-Theatre at SC State Museum; worked with museum staff and local businesses on planning activities for 2017 total solar eclipse.
- Speaker for public astronomy events at local schools, organizations and media. Organizer of public talks in astronomy. Work with local school teachers to improve STEM education.

Graduate and Postdoctoral Advisors:

Donald G. York (U. Chicago), S. Michael Fall (STScI), John M. Hill (U. Arizona)

Research Students and Post-doctoral Fellows Supervised:

30 undergraduate research students and 23 graduate/postdoctoral students supervised. Students have gone on to research careers at well-regarded institutions (e.g., U. Chicago; U. Mass., Amherst; Ohio State U.; Leiden Obs.; Lab. d’Astrophys. de Marseille; STScI).