BRIAN W. O'SHEA

Professional preparation

University of Illinois, Urbana-Champaign, IL, Engineering Physics (cum laude), B.S., 2000,

University of Illinois, Urbana-Champaign, IL, Physics, M.S., 2001,

University of Illinois, Urbana-Champaign, IL, Physics, PhD, 2005,

Los Alamos National Laboratory, Los Alamos, NM, Theoretical Astrophysics (postdoctoral education; 2005 – 2008)

Appointments

2008-present: Assistant and Associate Professor, Department of Computational Mathematics, Science and Engineering; Department of Physics and Astronomy; and National Superconducting Cyclotron Laboratory, Michigan State University

2005-2008: Director's Postdoctoral Fellow, Theoretical Astrophysics Group, Los Alamos Nat. Lab.

2005: Graduate Research Assistant, Theoretical Astrophysics Group, Los Alamos Nat. Lab.

2002-2005: Graduate Research Assistant, Lab. for Computational Astrophysics, UC San Diego

Related products and synergistic activities

5 closely related products

1. Egan, H., O'Shea, B.W., Hallman, E., Burns, J., Xu, H., Collins, D., Li, H. & Norman, M.L. "Length Scales and Turbulent Properties of Magnetic Fields in Simulated Galaxy Clusters," 2016, ApJ, submitted (arXiv:1601.05083)

2. O'Shea, B.W., Wise, J.H., Xu, H., & Norman, M.L., "Probing the Ultraviolet Luminosity Function of the Earliest Galaxies with the Renaissance Simulations," 2015, ApJL, 805, 12

3. Bryan, G. L., Norman, M. L., O'Shea, B. W., et al. "ENZO: An Adaptive Mesh Refinement Code for Astrophysics," 2014, Ap. J. S., 211, 19

4. Skillman, S.W., Xu, H., Hallman, E.J., O'Shea, B.W., Burns, J.O., Li, H., Collins, D.C., & Norman, M.L., "Cosmological MHD Simulations of Galaxy Cluster Radio Relics: Insights and Warnings for Observations," 2013, Ap. J., 765, 21

5. Skillman, S.W., Hallman, E.J., O'Shea, B.W., Burns, J.O., Smith, B.D., Turk, M.J., 2011. "Galaxy Cluster Radio Relics in Adaptive Mesh Refinement Cosmological Simulations: Relic Properties and Scaling Relationships," Ap. J., 735, 96

5 other significant products

1. Gomez, F.A., Coleman-Smith, C. E., O'Shea, B. W., Tumlinson, J., & Wolpert, R. L. "Dissecting Galaxy Formation Models with Sensitivity Analysis - a New Approach to Constrain the Milky Way Formation History," 2014, Ap. J., 787, 20

2. Meece, G. R., Smith, B. D., & O'Shea, B. W. "Fragmentation in Dusty Low-metallicity Star-forming Halos," 2014, Ap. J., 783, 75

3. Skory. S., Hallman, E., Burns, J.O., Skillman, S.W., O'Shea, B.W. & Smith, B.D. 2013 "On the Road to More Realistic Galaxy Cluster Simulations: The Effects of Radiative Cooling and Thermal Feedback Prescriptions on the Observational Properties of Simulated Galaxy Clusters," ApJ, 763, 38

4. Turk, M.J., Abel, T., & O'Shea, B.W. 2009, "The Formation of Population III Binaries from Cosmological Initial Conditions," Science, Vol. 395, Issue 5940, pp.601-606

5. O'Shea, B.W. & Norman, M.L. 2007, "Population III Star Formation in a Lambda CDM Universe, I: Effect of Environment on Protostellar Accretion Rates," ApJ, 654, 66–92

Synergistic activities

1. Co-developer of the Enzo AMR cosmology code, organizer of multiple public code releases, and co-organizer of several Enzo User and Developer Workshops. Enzo is an NSF PRAC project, funded by three separate awards (I am the PI on two).

2. Co-founder of MSU's Department of Computational Mathematics, Science and Engineering; director of both undergraduate and graduate programs and developer of introductory computational modeling and data analysis courses.

3. Active collaboration with the National Center for Supercomputing Applications scientific visualization group (led by Donna Cox) to do scientific visualizations for PBS, Discovery Channel, and planetarium shows.

4. PI of two sequential NSF PRAC grants with a total of 200 million core-hours on the Blue Waters supercomputer.

5. Head of effort to create a calculus-based introductory physics sequence, targeted toward life science majors, that utilizes current reseach on active learning and effective teaching techniques.