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

2019-present: Director, Michigan State University Institute of Cyber-Enabled Research

2008-present: Assistant, Associate, and full 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. P. Grete, F.W. Glines, B.W. O'Shea. *K-Athena: a performance portable structured grid finite volume magnetohydrodynamics code*, 2019, submitted to IEEE Transactions on Parallel and Distributed Systems (TPDS) arXiv:1905.04341

2. P. Grete, B. W. O'Shea, K. Beckwith. *As a Matter of Force Systematic Biases in Idealized Turbulence Simulations*, 2018 The Astrophysical Journal Letters 858, doi:10.3847/2041-8213/aac0f5

3. P. Grete, B. W. O'Shea, K. Beckwith, W. Schmidt and A. Christlieb. *Energy transfer in compressible magnetohydrodynamic turbulence*, 2017 Physics of Plasmas 24, doi:10.1063/1.4990613

4. Meece, G.M., Voit, G.M., O'Shea, B.W., *Triggering and Delivery Algorithms for AGN Feedback*, 2016 The Astrophysical Journal, 841, doi:10.3847/1538-4357/aa6fb1

5. The Enzo Collaboration: 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, doi:10.1088/0067-0049/211/2/19

5 other significant products

1. Peeples, M.S., Corlies, L., Tumlinson, J., O'Shea, B.W., Lehner, N., O'Meara, John M., Howk, J.C., Smith, B.D., Wise, J.H., Hummels, C.B., *Figuring Out Gas and Galaxies in Enzo (FOGGIE). I. Resolving Simulated Circumgalactic Absorption at 2 ¡ z ¡ 2.5.* 2019 The Astrophysical Journal, 873, doi:10.3847/1538-4357/ab0654

2. J.H. Wise, J.A. Regan, B.W. O'Shea, M.L. Norman, T.P. Downes, H. Xu, *Formation of massive black holes in rapidly growing pre-galactic gas clouds*, 2019, 7742, 88, doi:10.1038/s41586-019-0873-4

3. K. Beckwith, P. Grete, B. W. O'Shea. *Correlations and Cascades in Magnetized Turbulence*, 2019 IEEE Transactions on Plasma Science, doi:10.1109/TPS.2019.2891934

4. Barrow, K. S. S., Wise, J. H., Norman, M. L., O'Shea, B. W., & Xu, H. "First light: exploring the spectra of high-redshift galaxies in the Renaissance Simulations," 2017, MNRAS, 469, 4863, doi:10.1093/mnras/stx1181

5. 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 The Astrophysical Journal Letters, 805, doi:10.1088/2041-8205/807/1/L12

Synergistic activities

1. Co-developer of the Enzo and Enzo-E AMR cosmology codes, including organization of multiple public code releases and co-organization of several Enzo User and Developer Workshops.

2. PI of three sequential NSF PRAC grants with a total of 280 million core-hours on the Blue Waters supercomputer (all of which use the Enzo code).

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

4. Co-founder of MSU's Department of Computational Mathematics, Science and Engineering; as part of that role, I have served as the director of both the undergraduate and graduate programs and developer of introductory computational modeling and data analysis courses.

5. Director of the MSU Institute for Cyber-Enabled Research, July 2019-present.