

Teaching Positions

Teaching Assistant, *Stars and Galaxies*, University of Illinois, Spring 2004

2 classes, ~25 students in a class, lecturing and grading (weekly)

Teaching Assistant, *Solar System*, University of Illinois, Fall 2003

2 classes, ~25 students in a class, lecturing and grading (weekly)

Teaching Assistant, *Introduction to Astronomy*, University of Illinois, Spring 2003

~200 students in class, leading observing sessions (4 in semester), grading (weekly)

High-Performance Computing

Experience: 14 years of numerical/scientific programming;

10 years of programming and utilizing massively parallel systems (up to 250,000 cores) with shared and distributed memory.

Programming: C/C++, Fortran, Python, IDL

Parallel paradigms: MPI, OpenMP

Visualization tools: VisIt, Paraview

Example systems used: Jaguar, Hopper, Roadrunner, ASCI Q (Department of Energy)
Cobalt, Tungsten (National Science Foundation)

Computer Allocations

Cosmological Simulations for Sky Surveys, National Energy Research Scientific Computing Center (NERSC), 12,000,000 CPU hours, Co-Investigator, 2012

Cosmological Simulations for Galaxy Surveys, National Energy Research Scientific Computing Center (NERSC), 1,100,000 CPU hours, Co-Investigator, 2011

Scaling Relations in Clusters of Galaxies, Los Alamos Institutional Computing, 1,500,000 CPU hours, Principal Investigator, 2011–2012

Fellowships and Grants

Grants-in-Aid of Research support from the National Academy of Sciences, administered by Sigma Xi, The Scientific Research Society, 2004

University of Illinois Astronomy Department Fellowship, 2002

Professional Societies

American Physical Society

American Astronomical Society

Society for Industrial and Applied Mathematics (SIAM)

Publications in Refereed Journals

1. A. Knebe et al.: *Halos Gone Mad: The Halo Finder Comparison Project*, 2011, Monthly Notices of the Royal Astronomical Society, Volume 415, Issue 3, p. 2293
2. S. Bhattacharya, K. Heitmann, M. White, Z. Lukić, C. Wagner, and S. Habib: *Mass function predictions beyond LCDM*, 2011, The Astrophysical Journal, Volume 732, Issue 2, article id. 122
3. U. Alam, Z. Lukić, and S. Bhattacharya: *Galaxy Clusters as a Probe of Early Dark Energy*, 2011, The Astrophysical Journal, Volume 727, Issue 2, id. 87
4. A. Pope, S. Habib, Z. Lukić, D. Daniel, P. Fasel, N. Desai, and K. Heitmann: *The Accelerated Universe*, 2010, Computing in Science & Engineering, Volume 12, Issue 4, p. 17
5. M. White et al.: *Particle mesh simulations of the Lyman-alpha forest and the signature of Baryon Acoustic Oscillations in the intergalactic medium*, 2010, The Astrophysical Journal, Volume 713, p. 383
6. S. Habib, A. Pope, Z. Lukić and 9 coauthors: *Hybrid petacomputing meets cosmology: The Roadrunner Universe project*, 2009, Journal of Physics, Volume 180, p. 012019
7. Z. Lukić, D. Reed, K. Heitmann, and S. Habib: *The Structure of Halos: Implications for Group and Cluster Cosmology*, 2009, The Astrophysical Journal, Volume 692, p. 217
8. K. Heitmann, Z. Lukić and 12 coauthors: *The Cosmic Code Comparison Project*, 2008, Computational Science and Discovery, Volume 1, p. 5003
9. Z. Lukić, K. Heitmann, S. Habib, S. Bashinsky, and P. M. Ricker: *The Halo Mass Function: High Redshift Evolution and Universality*, 2007, The Astrophysical Journal, Volume 671, p. 1160
10. K. Heitmann, Z. Lukić, S. Habib, and P. M. Ricker: *Capturing Halos at High Redshifts*, 2006, The Astrophysical Journal, Volume 642, p. L85

Recent Presentations

Cluster Cosmology: Opportunities & Challenges, INPA, Lawrence Berkeley National Laboratory, 2011

Constraining Early Dark Energy with Galaxy Clusters, Essential Cosmology for the Next Generation, Puerto Vallarta, 2011

Probing early dark energy with galaxy clusters, Galaxy Clusters: Observations, Physics, and Cosmology, Max Planck at Garching, 2010

Cluster cosmology: theory challenges and applications, ITP, University of Zurich, 2010

Mass function, halo structure and bias of galaxy clusters in simulations, ICC, University of Barcelona, 2010

LANL halo finder, Halos Going Mad workshop, Madrid, 2010

Cosmology with galaxy clusters: early dark energy, Snowcluster conference, Utah, 2010

Dark matter halo structure, Santa Fe Cosmology Workshop, 2009