

## John H. Wise

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### Professional Appointments

2011 - present

**Georgia Institute of Technology**  
Assistant Professor, School of Physics

### Fellowships

2009 - 2011

**Princeton University - Astrophysical Sciences**  
Hubble Fellow, Lyman Spitzer Fellow  
Mentor: Renyue Cen

2007 - 2009

**NASA / Goddard Space Flight Center**  
NASA Postdoctoral Program Fellow  
Observational Cosmology, Gravitational Astrophysics  
Mentors: John Mather & Joan Centrella

### Education

2004 - 2007

**Stanford University**  
Ph.D., Physics specializing in Astrophysics  
Dissertation: "Resolving the Formation of Protogalaxies"  
Advisor: Tom Abel

2001 - 2004

**Pennsylvania State University**  
Ph.D. (transferred), Astronomy and Astrophysics  
Advisors: Tom Abel and Michael Eracleous

1998 - 2001

**Georgia Institute of Technology**  
B.S. Highest Honor, Physics  
Research advisors: Douglas Gies and Richard Miller (Georgia State)

### Research Interests

- Primordial star and galaxy formation
- Physics of cosmological reionization
- Chemical, radiative, and thermal feedback from stars and black holes
- High redshift black hole evolution
- Photo-realistic visualization

### Teaching Experience

Fall 2011

Georgia Institute of Technology – Physics  
PHYS 2122 – Introductory Physics II

Fall 2001

Pennsylvania State University – Astronomy & Astrophysics  
Teaching Assistant, Astro 011 – Introductory Astronomy Lab

### Professional Organizations

2001 - present

American Astronomical Society

### Honors and Awards

2009 - present

Hubble Fellowship & Lyman Spitzer Fellowship

2008

AAS International Travel Grant

2007 - 2009

NASA Postdoctoral Program Fellow

2003 - 2004

Pennsylvania Space Grant Consortium

2002 Space Grant Fellowship  
 Pennsylvania State University  
 Stephen Brumbach Graduate Fellowship  
 2001 - 2002 Pennsylvania State University  
 Braddock Fellowship

### Outreach Activities

2007 - 2009 Supercomputing Conference, Demonstrator  
 2005 - 2007 KIPAC Visualization Laboratory, Demonstrator  
 April 2004 Penn State Space Day, Volunteer  
 2001 - 2003 Penn State Astrofest, Volunteer  
 2001 - 2002 Penn State Astronomy Open House, Assistant  
 January 2000 195th American Astronomical Society Meeting, Volunteer

### Refereed Journal Articles

1. **Wise, J. H.**, Turk, M. J., Norman, M. L., & Abel, T. 2011, "The Birth of a Galaxy: Primordial Metal Enrichment and Population II Stellar Populations", *Astrophysical Journal*, submitted
2. Kuhlen, M., Krumholz, M. R., Madau, P., Smith, B. D., & **Wise, J. H.** 2011, "Dwarf Galaxy Formation with H<sub>2</sub>-regulated Star Formation", *Astrophysical Journal*, submitted
3. Kim, J., **Wise, J. H.**, Alvarez, M. A., & Abel, T. 2011, "Galaxy Formation with Self-consistently Modeled Stars and Massive Black Holes. I: Feedback-regulated Star Formation and Black Hole Growth", *Astrophysical Journal*, in press
4. **Wise, J. H.** & Abel, T. 2011, "Enzo+Moray: Radiation Hydrodynamics Adaptive Mesh Refinement Simulations with Adaptive Ray Tracing", *Monthly Notices of the Royal Astronomical Society*, 414, 3458-3491
5. van Meter, J. R., **Wise, J. H.**, Miller, M. C., Reynolds, C. S., Centrella, J., Baker, J. G., Boggs, W. D., Kelly, B. J., & McWilliams, S. T. 2010, "Modeling Flows Around Merging Black Hole Binaries", *Astrophysical Journal Letters*, 711, 89-93
6. Alvarez, M. A., **Wise, J. H.**, Abel, T. 2009, "Accretion onto the First Stellar Mass Black Holes," *Astrophysical Journal Letters*, 133-137
7. Kim, J.-H., **Wise, J. H.**, & Abel, T. 2009, "Galaxy Mergers with Adaptive Mesh Refinement: Star Formation and Hot Gas Outflow," *Astrophysics Journal Letters*, 694, 123-127
8. **Wise, J. H.**, & Cen, R. 2009, "Ionizing Photon Escape Fractions from High Redshift Dwarf Galaxies," *Astrophysical Journal*, 693, 984-999
9. **Wise, J. H.**, & Abel, T. 2008, "Resolving the Formation of Protogalaxies. III. Feedback from the First Stars," *Astrophysical Journal*, 685, 40-56
10. **Wise, J. H.**, & Abel, T. 2008, "How Very Massive Metal-Free Stars Start Cosmological Reionization," *Astrophysical Journal*, 684, 1-17
11. **Wise, J. H.**, & Abel, T. 2008, "Resolving the Formation of Protogalaxies. II. Central Gravitational Collapse," *Astrophysical Journal*, 682, 745-757
12. **Wise, J. H.**, & Abel, T. 2007, "Suppression of H<sub>2</sub> Cooling in the Ultraviolet Background," *Astrophysical Journal*, 671, 1559-1567
13. **Wise, J. H.**, & Abel, T. 2007, "Resolving the Formation of Protogalaxies. I. Virialization," *Astrophysical Journal*, 665, 899-910
14. Abel, T., **Wise, J. H.**, & Bryan, G. B. 2007, "The HII Region of a Primordial Star," *Astrophysical Journal Letters*, 659, 87-90

15. Kähler, R., **Wise, J. H.**, Abel, T., & Hege, H.-C. 2006, "GPU-Assisted Raycasting of Cosmological Adaptive Mesh Refinement Simulations," *Proceedings of Volume Graphics*, pg. 103-110, Boston, USA
16. **Wise, J. H.** & Abel, T. 2005, "The Number of Supernovae from Primordial Stars in the Universe," *Astrophysical Journal*, 629, 615-624
17. **Wise, J. H.**, Eracleous, M., Charlton, J. C., & Ganguly, R. 2004, "Variability of Narrow, Associated Absorption in Moderate- and Low-Redshift Quasars," *Astrophysical Journal*, 613, 129-150
18. Penny, L. R., Gies, D. R., **Wise, J. H.**, Stickland, D. J., & Lloyd, C. 2002, "Tomographic Separation of Composite Spectra IX: The Massive Close Binary HD 115071," *Astrophysical Journal*, 575, 1050-1056

### Papers in Preparation

1. **Wise, J. H.**, Alvarez, M. A. & Abel, T. 2010, "The Suppression of Gas Accretion onto Stellar Mass Black Holes in High Redshift Dwarf Galaxies," *Astrophysical Journal*, in preparation

### Non-refereed Publications

1. **Wise, J. H.** & Cen, R., "Photon Escape Fractions from High Redshift Dwarf Galaxies," *Joint European and National Astronomy Meeting*, Vienna, Austria, September 2008
2. **Wise, J. H.** & Abel, T., "How the First Stars Shaped the First Galaxies," *First Stars III*, Santa Fe, NM, July 2007
3. Alvarez, M. A., **Wise, J. H.**, & Abel, T., "Black Hole Remnants of the First Stars," *First Stars III*, Santa Fe, NM, July 2007
4. Kim, J.-H., **Wise, J. H.**, & Abel, T., "Galaxy Evolution with Adaptive Mesh Refinement," *First Stars III*, Santa Fe, NM, July 2007
5. **Wise, J. H.**, Abel, T., Bryan G. B., & Turk, M. J. "Resolving the Formation of Protogalaxies," *Radiation Backgrounds from the First Stars, Galaxies and Black Holes*, College Park, MD, October 2006
6. **Wise, J. H.** & Abel, T., "Numerically Resolved Protogalaxy Formation," *207th American Astronomical Society Meeting*, Washington, DC, January 2006
7. **Wise, J. H.** & Abel, T., "Numerically Resolved Protogalaxy Formation," *Open Questions in Cosmology: The First Billion Years*, Garching, Germany, August 2005
8. **Wise, J. H.** & Abel, T., "The Number of Supernovae from Primordial Stars in the Universe," *First Stars II*, State College, PA, June 2003
9. **Wise, J. H.** & Abel, T. 2003, "The Number of Supernovae from Primordial Stars in the Universe," AIP Conf. Proc. 666: *The Emergence of Cosmic Structure*, 666, 97
10. Penny, L. R., Gies, D. R., Bagnuolo, W. G., **Wise, J. H.**, Herrero, A., Stickland, D. J., & Lloyd, C. 2003, "A critical comparison of spectroscopic and evolutionary masses for O-type binary systems," *IAU Symposium*, 212, 216
11. **Wise, J. H.** & Abel, T., "The Number of Supernovae from Primordial Stars in the Universe," *201st American Astronomical Society Meeting*, Seattle, WA, January 2003
12. **Wise, J. H.** & Abel, T., "The Number of Supernovae from Primordial Stars in the Universe," *The Emergence of Cosmic Structure*, College Park, MD, October 2002
13. **Wise, J. H.**, Eracleous, M., Charlton, J. C., & Ganguly, R. "A Search for Variability in Quasar Narrow, Associated Absorption Lines," *199th American Astronomical Society Meeting*, Washington, DC, January 2002

### Colloquia and Conference Talks

1. *Galaxy Formation*, Contributed Talk, Durham, UK, July 2011

2. *The First Galaxies*, Invited Talk, Ringberg Castle, Germany, June 2011
3. Michigan State University, Invited Colloquium, East Lansing, MI, March 2011
4. *Future of AstroComputing*, Invited Talk, San Diego, CA, December 2010
5. University of Arizona, Invited Colloquium, Tucson, AZ, December 2010
6. *Cosmic Radiation Fields*, Contributed Talk, Hamburg, Germany, November 2010
7. Los Alamos National Laboratory, Invited Colloquium, Los Alamos, NM, October 2010
8. Kapteyn Astronomical Institute, Invited Colloquium, Groningen, Netherlands, September 2010
9. *Formation and evolution of black holes, galaxies, and their environment*, Contributed Talk, Potsdam, Germany, September 2010
10. Stanford University, Invited Seminar, Stanford, CA, July 2010
11. Enzo Workshop 2010, UC-San Diego, Invited Talk, La Jolla, CA, June 2010
12. *The First Galaxies, Quasars, and Gamma-Ray Bursts*, Invited Talk, State College, PA, June 2010
13. Canadian Institute for Theoretical Astrophysics, Invited Seminar, Toronto, ON, May 2010
14. *The First Stars and Galaxies*, Invited Talk, Austin, TX, March 2010 (cancelled)
15. Swinburne University, Invited Seminar, Melbourne, Australia, December, 2009
16. *Missing Baryons 2009*, Invited Review, Sydney, Australia, December, 2009
17. Canadian Institute for Theoretical Astrophysics, Invited Seminar, Toronto, ON, January 2009
18. Carnegie Mellon University, Invited Seminar, Pittsburgh, PA, January 2009
19. *American Astronomical Society Meeting*, Contributed Talk, Long Beach, CA, January 2009
20. *The Impact of Simulations in Cosmology and Galaxy Formation*, Invited Talk, Trieste, Italy, October 2008
21. University of Heidelberg, Institute for Theoretical Astrophysics, Seminar, September 2008
22. *Cosmic Dust & Radiative Transfer*, Invited Talk, Heidelberg, Germany, September 2008
23. *The First Two Billion Years of Galaxy Formation*, Contributed Talk, Aspen, CO, February 2008
24. Grand Challenge Problems in Computational Astrophysics Reunion II, Contributed Talk, Lake Arrowhead, CA, December 2007
25. UCSB / Kavli Institute for Theoretical Physics, Seminar, October 2007
26. NASA / Goddard Space Flight Center, SEAL Seminar, September 2007
27. *Radiative Transfer Workshop*, Contributed Talk, Durham, UK, September 2007
28. *First Stars III*, Contributed Talk, Santa Fe, NM, July 2007
29. University of Maryland, Center for Theory and Computation, Seminar, October 2006
30. NASA / Goddard Space Flight Center, Exploration of the Universe, Colloquium, October 2006
31. Harvard-Smithsonian Center for Astrophysics, Institute for Theory and Computation, Seminar, October 2006
32. Princeton University, Seminar, October 2006
33. University of California – Berkeley, Seminar, September 2006
34. *Physics and Astrophysics of Black Holes*, Contributed Talk, Santa Fe, NM, July 2006