

# Matt R. Mechtley

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## Education

**Arizona State University**, 2002–2007

B.S. Mathematics, *Magna Cum Laude*

Relevant Coursework: Abstract Algebra, Chaos and Nonlinear Dynamics, Linear Algebra, Real Analysis, String Theory, Topology

## Research Experience

Graduate Research Assistant 2009–Present  
Dr. Mark Robinson Arizona State University  
Data processing and scientific analysis of coordinated LROC optical and Mini-RF radar observations of the lunar surface using the Lunar Reconnaissance Orbiter. Research focuses on the relative importance of various surface weathering processes, including micrometeorite sandblasting and maturation effects of solar wind cosmic rays.

Undergraduate Research Assistant 2006–2007  
Dr. Rogier Windhorst Arizona State University  
Developed a cross-platform interactive simulation of the Hubble Ultra Deep Field, allowing users to move about the dataset in three dimensions. Incorporated the Friedmann-Lemaître-Robertson-Walker metric to demonstrate non-Euclidean aspects of the expanding Universe's geometry and other key concepts in cosmology.

## Teaching Experience

Instructor, Astronomy Lab I, Arizona State University, Fall 2009

## Employment

Simulations Programmer 2007–2009  
Flashbang Studios, LLC Tempe, AZ  
System development and programming for games, simulations, visualizations, and other interactive media. Emphasis on physics simulation, 3-dimensional graphics and animation, developing autonomous agents, and web integration.

## Publications

“Interactive Cosmology Visualization Using the HUDF,” **M. Mechtley**, R. A. Windhorst, L. M. Will, and S. H. Cohen (2010, in preparation).

## Conference Presentations and Posters

“Coordinated LROC and Mini-RF Observations of the Lunar Surface” **M. Mechtley**, S. J. Lawrence, P. D. Spudis, D. B. J. Bussey, and M. S. Robinson  
41st Lunar and Planetary Science Conference, Mar. 1-5, 2010

“Appreciating Hubble at Hyperspeed: A Teaching Tool for Students & Educators,” **M. Mechtley**  
Arizona/NASA Space Grant Undergraduate Research Program Statewide Symposium, April 27-28, 2007

“How can the James Webb Space Telescope measure First Light, Reionization, and Galaxy Assembly?,” R. A. Windhorst, R. A. Jansen, S. H. Cohen, **M. Mechtley**, H. Yan, and C. Conselice  
American Astronomical Society 2007 Winter Meeting, Jan. 5-10, 2007

“Appreciating Hubble at Hyper-speed: A Web-tool for Students and Teachers,” L. M. Will, **M. Mechtley**, S. H. Cohen, R. A. Windhorst, S. Malhotra, J. Rhoads, N. Pirzkal, and F. Summers  
American Astronomical Society 2007 Winter Meeting, Jan. 5-10, 2007

## Memberships

American Astronomical Society, 2009–Present

## Honors and Awards

NASA Space Grant Undergraduate Research Fellowship, 2006–2007

## Service and Outreach

Vice President, Arizona State University Astronomy Open House, 2009–Present

Council Member, School of Earth and Space Exploration Graduate Student Council, 2009–Present

Numerous Education and Public Outreach projects for ASU School of Earth and Space Exploration, Arizona/NASA Space Grant Consortium, Arizona Science Center, 2006–Present

Officer, Arizona State University Math Club, 2006–2007

## Technical Skills and Proficiencies

### Operating Systems

Mac OS X, GNU/Linux, Unix (BSD, Solaris), Windows

### Programming Languages

C#, Objective-C, Perl, Python, Java, Javascript, PHP, C++

### Software

Proficient: L<sup>A</sup>T<sub>E</sub>X, Unity, Adobe Photoshop and Illustrator, ISIS

## **Interests**

### **Research**

Observational Astrophysics and Cosmology, Galaxy Formation and Evolution, Lunar Surface Processes

### **Personal**

Hiking, Uni- and Bicycling, Do-It-Yourself Electronics, Social and Interactive Media, Science Outreach