

Matt R. Mechtley

506 W 5th St Apt B
Tempe, AZ 85281
United States

Phone: +1.623.703.3630
mmechtley@gmail.com

Education

Arizona State University, 2009–Present

Ph.D. Astrophysics, Est. graduation date, Spring 2014

Courses: Cosmology, Extragalactic Astronomy, Instrumentation, Interstellar Medium, Galactic Dynamics, Stellar Physics, Radiative Processes

Arizona State University, 2002–2007

B.S. Mathematics, *Magna Cum Laude*

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

Research Experience

Graduate Research Assistant 2010–Present
Prof. Rogier Windhorst Arizona State University
Reduced and analyzed HST imaging data. Authored automated data reduction pipeline for the HIPPIES HST survey (P.I. H. Yan, 62 fields \times 4 filters, ~ 287 arcmin², ~ 600 orbits). Performed point-source modeling and subtraction on $z \sim 6$ QSOs (paper in preparation). Authored HST, NOAO proposals. Prepared HST Phase II observing plans.

Graduate Research Assistant 2009–2010
Prof. Mark Robinson Arizona State University
Reduced and analyzed Lunar Reconnaissance Orbiter data, including LROC visible and Mini-RF radar observations of the lunar surface. Researched cratering and surface weathering processes as traced by rock size distributions (paper in preparation).

Undergraduate Research Assistant 2006–2007
Prof. 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.

Grants and Awards

January 2012

Chambliss Astronomy Achievement Student Award, Honorable Mention

WFC3 Imaging of $z=6$ Quasars: Examining AGN Host Galaxies in the Early Universe

May 2011

School of Earth and Space Exploration Graduate Research Merit Award

WFC3 Imaging of $z \sim 6$ QSO Host Galaxies \$1800

Aug. 2006

NASA Space Grant Undergraduate Research Fellowship

Appreciating Hubble At Hyper-speed: A Web Tool for Astronomy Education \$3000, 2 semesters

Technical Skills and Proficiencies

Operating Systems

Mac OS X, GNU/Linux, Unix, Windows

Programming Languages

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

Software

Multidrizzle, TinyTim, GALFIT, SExtractor, APT, **aXe**, L^AT_EX, Unity, Adobe Photoshop and Illustrator, USGS ISIS

Teaching Experience

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

Other Professional Experience

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

Infrared Imaging of a $z = 6.42$ Quasar Host Galaxy With the Hubble Space Telescope Wide Field Camera 3 **M. Mechtley**, R. A. Windhorst, R. E. Ryan, G. Schneider, S. H. Cohen, et al. 2012, in preparation

Radar and Optical Observations of Young Craters With Boulder-Poor Ejecta **M. Mechtley**, S. J. Lawrence, M. S. Robinson, D. B. J. Bussey, & G. W. Patterson 2012, in preparation

Interactive Cosmology Visualization Using the HUDF **M. Mechtley**, R. A. Windhorst, L. M. Will, & S. H. Cohen 2012, in preparation

The Size Evolution of Passive Galaxies: Observations from the Wide Field Camera 3 Early Release Science Program R. E. Ryan Jr., P. J. McCarthy, S. H. Cohen, H. Yan, N. P. Hathi, A. M. Koekemoer, M. J. Rutkowski, **M. Mechtley**, et al. 2012, submitted to ApJ, arXiv: 1007.1460R

Hubble Space Telescope Observations of Field Ultracool Dwarfs at High Galactic Latitude R. E. Ryan Jr., P. A. Thorman, H. Yan, X. Fan, L. Yan, **M. Mechtley**, et al. 2011, ApJ, 739, 83

The Surficial Nature of Lunar Swirls as Revealed by the Mini-RF Instrument C. D. Neish, D. T. Blewett, D. B. J. Bussey, S. J. Lawrence, **M. Mechtley**, et al. 2011, Icarus, 215, 186

The Hubble Space Telescope Wide Field Camera 3 Early Release Science Data: Panchromatic Faint Object Counts for 0.2-2 μ m Wavelength R. A. Windhorst, S. H. Cohen, N. P. Hathi, P. J. McCarthy, R. E. Ryan, Jr., H. Yan, I. K. Baldry, S. P. Driver, J. A. Frogel, D. T. Hill, L. S. Kelvin, A. M. Koekemoer, **M. Mechtley**, et al. 2011, ApJS, 193, 27

Conference Presentations and Posters

WFC3 Imaging of $z=6$ Quasars: Examining AGN Host Galaxies in the Early Universe **M. Mechtley**, R. A. Windhorst, R. E. Ryan, S. H. Cohen, G. Schneider, et al. 2012, AAS #219, Jan 2012

Multi-component SED Fitting Of AGN Host Galaxies S. H. Cohen, R. E. Ryan, R. A. Windhorst, N. A. Grogin, N. P. Hathi, A. N. Straughn, **M. Mechtley**, et al. 2012, AAS #219, Jan. 2012

WFC3 Imaging of $z=6$ QSO Hosts: A Method for PSF Characterization and Subtraction **M. Mechtley**, R. A. Windhorst, G. Schneider, S. H. Cohen, X. Fan, et al. 2011, AAS #217, Jan. 2011

Coordinated Radar and Optical Observations of Young Craters With Obscured Ejecta Blocks **M. Mechtley**, S. J. Lawrence, M. S. Robinson, D. B. J. Bussey, & G. W. Patterson NASA Lunar Science Forum #3, July 2010

Coordinated LROC and Mini-RF Observations of the Lunar Surface S. J. Lawrence, **M. Mechtley**, P. D. Spudis, D. B. J. Bussey, & M. S. Robinson LPSC #41, Mar. 2010

The Hubble Space Telescope Wide Field Camera 3 Early Release Science Data: Panchromatic Faint Object Counts From 0.2-2 Micron To AB=26-27 Mag R. A. Windhorst, P. J. McCarthy, S. H. Cohen, R. E. Ryan Jr., S. Driver, N. P. Hathi, A. Koekemoer, **M. Mechtley**, et al. AAS #215, Jan. 2010

The "Appreciating Hubble At Hyper-speed" Web-tool and Curriculum L. M. Will, **M. Mechtley**, S. H. Cohen, R. A. Windhorst, N. Pirzkal, et al. AAS #211, Jan. 2008

Technical Aspects Of How The James Webb Space Telescope Can Measure First Light, Reionization, And Galaxy Assembly R. A. Windhorst, R. A. Jansen, S. H. Cohen, **M. Mechtley**, N. P. Hathi, et al. AAS #211, Jan. 2008

Appreciating Hubble at Hyperspeed: A Teaching Tool for Students & Educators **M. Mechtley**, R. A. Windhorst, L. M. Will, & S. H. Cohen Arizona/NASA Space Grant Undergraduate Research Program Statewide Symposium, Apr. 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, & C. Conselice AAS #209, Jan. 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, et al. AAS #209, Jan. 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

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

Officer, Arizona State University Math Club, 2006–2007