Nicholas Steven Kern

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Education

University of California, Berkeley — August 2015 - present
Pursuing a Ph.D. in Astronomy and Astrophysics, expected 2021

University of Michigan, Ann Arbor — May 2015
BS in Physics and Astronomy, Minor in Japanese Language

Research Experience

Research Assistant, University of Michigan, Department of Astronomy
Ann Arbor, MI, USA — April 2012 – August 2015
Advisor: Assistant Professor Christopher Miller
- Calibrated the richness–mass relationship of galaxy clusters with stacked cluster phase spaces
- Developed a stacking algorithm to improve the precision of galaxy cluster dynamical mass estimation techniques

Independent Research — July 2013 – August 2015
Advisor: Dr. John Tobin
- Conducted a JVLA radio continuum study of embedded protostars in the Serpens South protocluster

Research Intern, University of Tokyo, Department of Physics
Tokyo, Japan — August – September 2014
Advisor: Dr. Nami Sakai and Professor Satoshi Yamamoto
- Imaged ALMA spectral line data towards L1527's protostellar disk to infer chemistry and accretion mechanisms

REU Summer Student, National Radio Astronomy Observatory
Charlottesville, VA, USA — June – August 2013
Advisor: Dr. Jeff Mangum
- Calibrated, reduced and imaged JVLA spectral line data towards multiple starburst galaxies to infer density and temperature of dense gas clouds

Refereed Journal Publications

Gifford, D., Miller, C. J., & **Kern, N.** (2013) ApJ, 773, 116: *"A Systematic Analysis of Caustic Methods for Galaxy Cluster Masses"* doi:10.1088/0004-637X/773/2/116

Submitted Journal Publications

Kern, N. S., Keown, J. A., Tobin, J. J., Mead, A., & Gutermuth, R. (2015) *"Radio Properties of Young Stellar Objects in the Serpens South Infrared Dark Cloud"*. Submitted to *The Astronomical Journal*.

Gifford, D., **Kern, N. S.**, & Miller, C. J. (2015) *"Stacking Caustic Masses from Galaxy Clusters"*. Submitted to *The Astrophysical Journal*.

Miller, C. J., Stark, A., Gifford D., & **Kern, N.** (2015) *"Inferring Gravitational Potentials from Mass Densities in Cluster-Sized Halos"*. Submitted to *The Astrophysical Journal*.

Stark, A., Miller, C. J., **Kern, N.**, Gifford, D., Zhao, G. B., Li, B., Koyama, K., & Nichol, R. C. (2015) *"A Probe of Gravity in the Non-Linear Regime: Chameleon f(R) gravity and Galaxy Cluster Gravitational Potentials"*. Submitted to *The Physical Review Letters*.

Honors & Awards

Graduated with Highest Honors and Distinction from U. Michigan — 2015
Excellence in Astrophysics Research Award, U. Michigan — 2015

Foreign Language & Area Studies (FLAS) Fellow	2014
University of Michigan International Institute Fellow	2014
University of Michigan Honors College University Honors Award	2014
University of Michigan James B. Angell Scholar Award	2014
Granader Family Upper-Level Writing Prize in Natural Science	2014
Big Ten Conference's Distinguished Scholar Award	2013
University of Michigan Scholar Athlete Award	2011, 2012, 2013
Big Ten Conference's Academic All Big Ten Award	2012
Honors College Sophomore Honors Award	2012

Observing Experience

- Co-I, Hiltner 2.4 m telescope at MDM Observatory, AZ, U.S. — March 2014
  "Measuring the Mass Dependence of Galaxy Clustering", 15 nights

Teaching & Outreach

Graduate Student Instructor, UC Berkeley, Department of Astronomy — Fall 2015
GSI for "Astronomy 160: Stellar Physics" for undergraduate students

Bay Area Scientists in Schools (BASIS), Berkeley, CA — Fall 2015
Monthly visits to a local primary school to teach a hands-on class on any science topic

Learning Assistant, University of Michigan, Department of Physics — Spring 2015
Taught the Python Programming Language to Introductory Mechanics students

Student Astronomical Society, University of Michigan — 2014 – 2015
Volunteered with club that hosts monthly public viewing nights and planetarium shows

Skills

Programming Languages:
- Python, SQL, Bash, IDL, HTML

Data Reduction Software:
- Python, CASA

Advanced Computing:
- Experience with high-performance, parallel and cloud computing

Languages:
- Advanced proficiency in written and spoken Japanese

Professional Presentations

225th American Astronomical Society Meeting, Seattle, WA — January 2015
Poster Presented: "VLA Observations Reveal Embedded Protostars in the Serpens South Infrared Dark Cloud"

U. Michigan Dept. of Astronomy Undergrad Research Session, Ann Arbor, MI — April 2014
Poster Presented: "Caustic Masses from Stacking Galaxy Clusters"

223rd American Astronomical Society Meeting, Washington, D.C. — January 2014
Poster Presented: "Imaging the Spatial Density Within Starburst Galaxies M82 and Arp220"

University of Michigans Cyber Infrastructure Days, Ann Arbor, MI — November 2013
Poster Presented: "Cluster Stacking: Improving the Precision and Accuracy of Galaxy Cluster Mass Estimation Techniques"

National Radio Astronomy Summer REU, Charlottesville, VA — August 2013
Science Talk Presented: "Imaging the Spatial Density Within Starburst Galaxies"

References

Christopher Miller, Assistant Professor
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