

Emily E. Richards

CONTACT INFORMATION	Indiana University Department of Astronomy Swain West 318 727 East 3rd Street Bloomington, IN 47405-7105	<i>Phone:</i> (812) 855-5136 <i>Email:</i> er7@indiana.edu
RESEARCH INTERESTS	Galaxy formation and evolution; galaxy kinematics; radio interferometry	
EDUCATION	Ph.D., Astronomy , Indiana University Minor: Scientific Computing Advisor: Dr. Liese van Zee	Anticipated August 2016
	M.A., Astronomy , Indiana University	2013
	B.S., Physics & Astronomy , University of Iowa Minor: Music Advisor: Dr. Cornelia C. Lang	2011
RESEARCH EXPERIENCE	Research Assistant , Indiana University Advisor: Dr. Liese van Zee Neutral hydrogen kinematic study of galaxies; galaxy structural parameters.	2011-present
	Research Assistant , University of Iowa Advisor: Dr. Cornelia C. Lang Study of the interstellar medium in the Galactic Center; search for massive stellar clusters in the Galaxy.	2008-2011
	REU Student , University of Wisconsin-Madison University of Wisconsin-Madison Research Experience for Undergraduates Advisor: Dr. Sebastian Heinz Spectral analysis of the jet-powered shell from the X-ray binary Cygnus X-1.	Summer 2010
TEACHING EXPERIENCE	Instructor, A100: The Solar System Instructor, A105: Stars and Galaxies Indiana University Introductory astronomy course for non-science majors. Topics include the celestial sphere, seasons and moon phases, properties of light, the sun, history of astronomy, origin of the solar system, properties and exploration of planets and other bodies in the solar system, extrasolar planets, stellar properties and life cycles, Milky Way, galaxy evolution, and cosmology.	Summer 2013, Fall 2014 Summer 2014
	Associate Instructor, Various Courses Indiana University Responsibilities include guest lecturing, holding office hours, grading, running rooftop observing sessions, attending all classes, and teaching telescope observing labs. Courses: Solar System (A100), Stars and Galaxies (A105), General Astronomy I (A221), General Astronomy II (A222), Modern Observational Techniques (A305).	2011-2014

OBSERVING EXPERIENCE	Wisconsin-Indiana-Yale-NOAO (WIYN) 0.9m telescope	2012-2014
	Kitt Peak National Observatory 34 nights from Principal and co-Investigator proposals	
	Wisconsin-Indiana-Yale-NOAO (WIYN) 3.5m telescope	2014-2015
	10 nights from Principal and co-Principal Investigator proposals	
	Very Large Array Radio Interferometer	2012-present
	63 hours from one Principal Investigator proposal Archival data processing and analysis	
SUMMER SCHOOLS	Summer School in Statistics for Astronomers XI	June 1-5, 2015
	Center for Astrostatistics, Pennsylvania State University, PA	
	NRAO Thirteenth Synthesis Imaging Workshop	May 29 - June 5, 2012
	VLA Socorro, NM	
PUBLIC AND COMMUNITY OUTREACH	Kirkwood Observatory Tours	2011-present
	Indiana University Host evening public observing sessions for the Bloomington, IN community. Give private tours of the observatory for local school and campus groups.	
	Physics and Astronomy Open House	2011-present
	Indiana University Participate in running hands-on astronomy activities for the Physics and Astronomy Open House, an annual public outreach event for children and adults throughout southern Indiana.	
	Indiana State Science Olympiad	2011-present
	Indiana University Assist in writing and grading of the Astronomy exam for the annual Indiana State Science Olympiad Competition for middle and high school students.	
	Outreach and Demonstration Shows	2007-2011
HONORS AND AWARDS	University of Iowa Participated in and helped organize various outreach activities and annual Department of Physics & Astronomy Demonstration Show.	
	Observatory Volunteer	2007-2011
	Cedar Amateur Astronomers, Palisades-Dows Observatory Volunteered for public outreach events for the Iowa City & Cedar Rapids, IA communities.	
	Dissertation Year Research Fellowship	Fall 2015-Spring 2016
	Indiana University College of Arts and Sciences	
	Indiana Space Grant Consortium Fellowship Award	2014-2016
	Awarded in 2014 and 2015	
	Frank and Margaret Edmondson Prize for Teaching	Spring 2015
	Indiana University Department of Astronomy	

Chambliss Astronomy Achievement Student Award 222 nd Meeting of the American Astronomical Society	Summer 2013
Provost's Travel Award for Women in Science Indiana University	2013-2015

COMPUTER
SKILLS

Astronomical Packages
Proficient with AIPS, GIPSY, IRAF, CASA, DS9

Programming Languages and Application Software
Proficient in L^AT_EX, SuperMongo
Working knowledge of R, Python, Linux/Unix shell scripting,
IDL, Mathematica, MatLab, C

PROFESSIONAL
MEMBERSHIPS

American Astronomical Society	2013-present
Society of Physics Students Department of Physics & Astronomy, University of Iowa Officer, President	2008-2011

REFEREED
PUBLICATIONS

4. Braun, Timothy T., van Zee, L., **Richards, E. E.**, McQuinn, K. B. W., Skillman, E. D., Staudaher, S., Dale, D. A., Barnes, K. L., *Detection of an Extended Outflow in NGC 4102*, in prep.
3. **Richards, Emily E.**, van Zee, L., Barnes, K. L., Staudaher, S., Dale, D. A., Braun, T. T., Wavle, D. C., Calzetti, D., Dalcanton, J. J., Bullock, J. S., Chandar, R., *Baryonic Distributions in the Dark Matter Halo of NGC 5005*, 2015, Monthly Notices of the Royal Astronomical Society, 449, 3981
2. P. H. Sell, S. Heinz, **E. Richards**, T. J. Maccarone, D. M. Russell, E. Gallo, R. Fender, S. Markoff, M. Nowak, *Shell-Shocked: The Interstellar Medium Near Cygnus X-1*, 2015, Monthly Notices of the Royal Astronomical Society, 446, 3579
1. **E. E. Richards**, C. C. Lang, C. Trombly, and D. F. Figer, *Multiwavelength Observations of Massive Stellar Cluster Candidates in the Galaxy*, 2012, The Astronomical Journal, 144, 89

NON-REFEREED
PUBLICATIONS

8. Braun, Timothy, van Zee, Liese, **Richards, Emily E.**, McQuinn, Kristen B., Skillman, Evan D., Edges Team, *Detection of an Extended Outflow in NGC 4102*, 2015, American Astronomical Society Meeting Abstracts, 225, #250.27
7. **E. E. Richards**, L. van Zee, D. C. Wavle, K. L. Barnes, S. Staudaher, D. A. Dale, D. Calzetti, J. J. Dalcanton, J. S. Bullock, R. Chandar, *Baryonic Distributions in the Dark Matter Halo of NGC 4088*, 2013, (Structure and Dynamics of Disk Galaxies Conference poster)
6. L. van Zee, D. Wavle, **E. E. Richards**, K. L. Barnes, S. Staudaher, D. A. Dale, D. Calzetti, J. Dalcanton, J. Bullock, R. Chandar, J. L. Hinz, *Structure Formation and Dark Matter Distributions in Dwarf Irregular Galaxies*, 2013, Probes of Dark Matter on Galaxy Scales, 30305

5. **E. E. Richards**, L. van Zee, D. C. Wavle, K. L. Barnes, S. Staudaher, D. A. Dale, D. Calzetti, J. J. Dalcanton, J. S. Bullock, R. Chandar, *Baryonic Distributions in the Dark Matter Halo of NGC 3992*, 2013, American Astronomical Society Meeting Abstracts, 222, #314.04
4. D. Wavle, L. van Zee, **E. E. Richards**, K. L. Barnes, S. Staudaher, D. A. Dale, D. Calzetti, J. Dalcanton, J. Bullock, R. Chandar, J. L. Hinz, *Kinematic Analysis of Nine Low Mass Gas-Rich Galaxies*, 2013, American Astronomical Society Meeting Abstracts, 222, #314.12
3. P. Sell, S. Heinz, **E. E. Richards**, D. Russell, E. Gallo, S. Markoff, R. Fender, M. Nowak, *The Shell-Shocked Interstellar Medium Near Cygnus X-1*, 2013, American Astronomical Society Meeting Abstracts, 222, #214.02
2. **E. E. Richards**, C. C. Lang, C. Trombley, D. F. Figer, HST/NICMOS GC Paschen Alpha Team, *Multiwavelength Observations of the Most Massive Stellar Clusters in the Galaxy*, 2011, Bulletin of the American Astronomical Society, 43, #241.07
1. **E. E. Richards**, T. Zimmermann, C. C. Lang, D. F. Figer, B. Davies, C. Trombley, *Massive Stellar Clusters in the Galaxy: Multiwavelength Observations of New Candidate Clusters*, 2010, (University of Iowa Undergraduate Research Festival poster)