

Dr. Mark B. Peacock

CONTACT DETAILS

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CURRENT POSITION

Senior Research Associate

July 2010 – current

Michigan State University, Dept of Physics & Astronomy, East Lansing, MI 48824, USA

OTHER AFFILIATIONS

Affiliate

October 2017 – current

Boise State University, Dept of Physics, Boise, ID 83713, USA

EDUCATION

PhD in Astrophysics

October 2006 – May 2010

University of Southampton, Physics & Astronomy, Southampton, SO17 1BJ, UK

MSc in Physics and Astronomy

October 2001 – July 2005

University of Bristol, H.H.Wills Physics Lab., Tyndall Avenue, Bristol, BS8 1TL, UK

GRANTS/ AWARDS

PI of the following grants:

- 2015 • HST Cycle 23 (2015) - 12 orbits - **\$72,690**:
The spatial distribution of hot stellar populations in M31's globular clusters:
Peacock M., Dieball A., Knigge C., Kundu A., Maccarone T., Strader J., Zepf Z.
- 2014 • Chandra Cycle 16 (2014) - 100ks - **\$48,500**:
Does the IMF vary with galaxy mass? The X-ray binary population of a key galaxy, NGC7457:
Peacock M., Zepf Z., Maccarone T., Kundu A., Gonzalez A., Lehmer B., Maraston C.
- HST Cycle 22 (2014) - 2 orbits - **\$13,500**:
Does the IMF vary with galaxy mass? The X-ray binary population of a key galaxy, NGC7457:
Peacock M., Zepf Z., Maccarone T., Kundu A., Gonzalez A., Lehmer B., Maraston C.

CoI on the following grants:

- 2016 • HST Cycle 24 (2016) - 16 orbits:
A Far Ultraviolet Study of Globular Clusters in NGC 3115
Kundu A., **Peacock M.**, Jeong H., Sohn T., Zepf S.
- 2014 • HST Cycle 22 (2014) - 18 orbits:
Testing Models of the Black-Hole X-ray Source in the NGC4472 Globular Cluster RZ...
Zepf S., **Peacock M.**, Kundu A., Maccarone T., Rhode K., Steele M.

- HST Cycle 22 (2014) Archival research grant:
Use of Wide-Field ACS Mosaics to Determine Properties of Globular Cluster Systems
Zepf S., Rhode K., **Peacock M.**
- 2013 • Chandra Cycle 15 (2013) archival research grant:
X-Raying the IMF in Elliptical Galaxies:
Zepf S., Kundu A., Maccarone T., **Peacock M.**
- Chandra Cycle 15 (2013) - 112ks:
Testing the universality of the stellar IMF using Chandra
Lehmer B., Maccarone T., Hornschemeier A., Gonzalez A., **Peacock M.**, et al.
- HST Cycle 21 (2013) Archival research grant:
A Multiwavelength Study of Recurrent Novae in the Bulge of M31
Shafer A., Bode M., Darnley M., Kundu A., Maccarone T., **Peacock M.**, et al.
- 2012 • NASA ADAP:
X-ray Binaries and Tests of the IMF in Early-Type Galaxies
Zepf S., **Peacock M.**, Kundu A., Maccarone T.

TEACHING
EXPERIENCE

- *Lecturer, Michigan State University:* Spring Semester, 2015
Instructor of record for a large undergrad class (152 students). *Visions of the Universe, ISP205*
(3 credits, 44 lectures, 152 students)
– official student feedback: overall instructor rating: excellent (74%), good (22%)
overall course rating: excellent (57%), good (36%)
- *Teaching assistant/ Tutor, University of Southampton:* 2006 – 2008
Teaching assistant for: *1st year Energy and Matter, PHYS1013* (2008, 2007); *1st year Astronomy for Poets, PHYS1009* (2007); *2nd year Classical Mechanics, PHYS2006* (2007); *3rd year Nuclei and Particles, PHYS3002* (2006).

STUDENT
SUPERVISION

- *Snigdaa Sethuram; Joint supervisor: REU student, Michigan State University:* 2016
Under my guidance, Snigdaa undertook a summer research project comparing SDSS and *HST* colors of globular clusters in the Virgo cluster. She has presented the work and we are currently working on publishing it.
- *Julia Chael; Joint supervisor: HSHSP student project, Michigan State University:* 2015
As part of MSU's 'high school honors sciences program' Julia undertook a research project to investigate the ultraviolet properties of globular clusters. Based on this project, she was named regional semifinalist in the 'Siemens high school science competition' and her work resulted in a refereed publication.

OUTREACH

- *Astronomy on tap Lansing*, Midtown Brewing Co., Lansing 2017
Public talk at Midtown Brewing Co. for Lansing's astronomy on tap: "The new worlds of 2016"
- *Stellar evolution workshops for MST@MSU Summer school*, MSU 2013 – 2017
Ran stellar evolution workshops. Through activities and discussion students learned about how we study and classify stars, the nuclear processes that power them and their evolution.
- *Science festival*, MSU 2015 – 2017
Ran astronomy activities for the public as part of the MSU science festival. Activities included: a solar telescope, showcasing the SOAR telescope, and identify the images competition.
- *Public observing nights*, MSU campus observatory various nights, 2016
Assisted with the campus observatory's 24" telescope, small telescopes and related activities for public observing nights.
- *Astronomical horizons talk*, Abrams Planetarium, East Lansing MI 22 March 2012
Public lecture and Q&A, title: "Unveiling the universe with clusters of stars"
- *Aimhigher Easter School*, University of Southampton 2007 – 2009
Ran half day astronomy workshops for the Aimhigher Easter school, designed to expose teenagers from dis-advantaged backgrounds to the academic environment.
- *ESF Higher Education Summer School*, University of Southampton 2007, 2008
Ran astronomy workshops for 15-16 year olds. Students investigated physical concepts with interactive workshops including 'toys in space' and a bottle rocket competition.
- *Science and Engineering Open Days*, University of Southampton 2007 – 2009
Assisted with astronomy activities for family open days. Activities included 'The Worldwide Telescope', 'Digital Universe', build your own *Integral* satellite, 3D astronomical posters.

PROFESSIONAL ACTIVITIES

- Refereed papers for ApJ, MNRAS and PASP
- Served on NASA-ADAP review panels (2015, 2016)
- Served on NASA *CXO* TAC (2015, 2017), reviewed proposals for CanTAC/CFHT (2015)

TECHNICAL SKILLS

- Excellent computing skills including using Linux systems and shell scripting.
- Experienced in programming in PYTHON and R
- Extensive experience with data reduction, modeling and statistical analysis
- Experience with reducing and analyzing astronomical data from ground based observatories, *HST* and *Chandra*. Includes using IRAF/PYRAF, DAOPHOT, SEXTRACTOR, ASTROCONDA/PYTHON/ PYFITS/ PHOTUTILS
- Observing experience: many nights of remote observing on the SOAR 4.1m telescope, outreach using small telescopes and MSU campus observatory's 24" telescope

- PRESENTATIONS
(CONFERENCES,
WORKSHOPS
AND SEMINARS)
- *16th Meeting of the High Energy Astrophysics Division (HEAD)* 20-24 August 2017
Sun Valley, Idaho, USA
Poster: The field LMXB populations of local early-type galaxies
 - *Compact Objects in Michigan: 5th Meeting,* 24 March 2017
East Lansing, Michigan, United States
 - *Indiana University, Bloomington, IN, USA* 08 March 2017
Invited seminar: The stellar populations and globular clusters of local early-type galaxies
 - *Michigan State University, East Lansing, MI, USA* 01 March 2017
Invited seminar: The stellar populations and globular clusters of local early-type galaxies
 - *15th Meeting of the High Energy Astrophysics Division (HEAD)* 3-7 April 2016
Naples, Florida, USA
Poster: The XLF of LMXBs in the fields of early-type galaxies, their metal-rich, and metal-poor globular clusters
 - *Globular Clusters and Galaxy Halos* 22-26 February 2016
Lorentz Center, Leiden, The Netherlands
Talk: The resolved stellar halo of NGC 3115 and comparison to its globular clusters
 - *The stellar IMF at low masses* 29 June - 01 July 2015
STSci, Baltimore, USA
Talk: Constraining IMF Variations with X-ray Binary Populations
 - *Baryons at low densities: the stellar halos around galaxies* 23-27 February 2015
ESO HQ, Garching, Germany
Talk: Detection of a distinct metal-poor stellar halo in the early-type galaxy NGC 3115
 - *14th Meeting of the High Energy Astrophysics Division (HEAD)* 17-21 August 2014
Chicago, Illinois, USA
Poster: The LMXB population of local type galaxies and implications for a variable IMF
 - *Compact Objects in Michigan: 2nd Meeting,* 25 April 2014
East Lansing, Michigan, United States
Talk: The LMXB population of local early type galaxies and implications for a variable IMF
 - *Unveiling the Formation of Massive Galaxies - Theoretical and Observational Challenges,* 2-7 February 2014
Aspen, Colorado, USA
Poster: The IMF and halo population of local early-type galaxies
 - *13th Meeting of the High Energy Astrophysics Division (HEAD),* 7-11 April 2013
Monterey, California, USA
Poster: The nature of the black hole in the globular cluster RZ2109
 - *Compact Objects in Michigan: 1st Meeting,* 29 March 2013
Wayne State University, Detroit, Michigan, USA
Talk: Properties of the ULX hosting globular cluster RZ2109 and the nature of its black hole

- *Indiana University*, Bloomington, IN, USA 16 February 2013
 Invited seminar: The M31 globular cluster system
- *American Astronomical Society, AAS Meeting 221*, 6-10 January 2013
 Long Beach, California, USA
 Poster: Signatures of Multiple Stellar Populations in Unresolved Star Clusters
- *Compact binaries in globular clusters*, 10-14 September 2012
 Lorentz center, Leiden, Netherlands
 Invited talk: Globular clusters and X-ray sources in M31
- *Harvard CfA*, Cambridge, MA, USA 28 Sept. 2011
 Invited OIR group talk: The M31 globular cluster system and its X-ray binaries
- *Ohio University*, Athens, OH, USA 25 May 2011
 Invited seminar: The M31 globular cluster system
- *University of Western Ontario*, London, Ontario, Canada 7 April 2011
 Invited seminar: The M31 globular cluster system and its X-ray binaries
- *American Astronomical Society, AAS Meeting 217*, 10-14 January 2011
 Seattle, Washington, USA
 Talk: The M31 Globular Cluster System and its X-ray Binaries
- *Michigan State University*, East Lansing, MI, USA 22 September 2010
 Invited seminar: The M31 globular cluster system and its X-ray binaries
- *SRON/ Utrecht University*, Utrecht, Netherlands January 2010
 Invited seminar: X-ray binaries and globular clusters
- *Formation and Evolution of Globular Clusters*, 12-16 January 2009
 Kavli Institute for Theoretical Physics, UC Santa Barbara, California, USA
 Talk & poster: The relationship between LMXBs, mass and stellar collision rate
- *Science from UKIDSS II*, 15-17 December 2008
 Royal Astronomical Society, Piccadilly, London, United Kingdom