
MARIANNE HEIDA

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Education

Dec 2015: Ph.D. Astrophysics

Radboud Universiteit Nijmegen/SRON Netherlands Institute for Space Research.

Thesis title: Red supergiant counterparts of ULXs

Advisors: dr. Peter Jonker and prof. Gijs Nelemans

Sep 2011: M.Sc. Astrophysics and Space Research (cum laude)

Universiteit Utrecht

Sep 2009: B.Sc. Physics and Astronomy (cum laude)

Universiteit Utrecht

Research Experience

Jan 2016- current: Postdoctoral scholar at Caltech

I work on optical and near-infrared spectroscopy of ultraluminous X-ray sources and Galactic X-ray binaries in the *NuSTAR* group under prof. Fiona Harrison.

Grants/Awards

- NASA grant to analyze data from Chandra Satellite (~\$36500) | to be awarded
- NASA grant to analyze data from Hubble Space Telescope (\$15707) | September 2017
- LKBF subsidy to visit Harvard and Texas Tech University (€1000) | August 2014
- Awarded Frye stipendium from Radboud University Nijmegen (€4500 for promising female Ph.D. students to promote their academic career) | December 2013
- LKBF subsidy to attend conference in Snowbird, UT (€1100) | April 2013
- LKBF subsidy to attend conference in Cambridge, MA (€750) | July 2012
- Selected by KNAW to attend the Lindau Nobel Laureate meeting on Physics and received a grant from the Foundation Lindau Nobelprizewinners Meetings at Lake Constance to attend (€1250) | July 2012

Observing experience

- William Herschel Telescope (La Palma), ~20 nights with LIRIS (NIR imaging/spectroscopy), ISIS (optical spectroscopy) and ACAM (optical imaging/spectroscopy)
- Magellan Telescope (Las Campanas Observatory, Chile), 2 nights with IMACS (optical spectroscopy)
- Keck Telescopes (Mauna Kea Observatory, Hawaii), ~15 nights with MOSFIRE (NIR spectroscopy), LRIS and DEIMOS (optical spectroscopy) and OSIRIS (NIR integral field spectroscopy)
- Hale Telescope (Palomar Observatory, California), ~10 nights with DoubleSpec (optical spectroscopy), TripleSpec (NIR spectroscopy), WIRC (NIR imaging)
- Very Large Telescope (Paranal Observatory, Chile), ~15 hours (service mode) with X-shooter (optical/NIR spectroscopy)
- Chandra X-ray Observatory, 150 ks as PI
- Hubble Space Telescope, 3 orbits as PI
- NuSTAR, 60 ks as PI
- XMM-Newton, 80 ks as PI

Invited Talks

- *Infrared spectroscopy of ULXs*, workshop 'The Dynamic Infrared Sky', Caltech, Pasadena, USA | September 2017
- *Optical/infrared counterparts of ULXs*, NuSTAR meeting 2016, Pasadena, USA | November 2016
- Colloquium, SRON Netherlands Institute for Space Research, Utrecht, Netherlands | October 2015
- Physics colloquium, Texas Tech University, Lubbock, USA | September 2014
- Lunch talk, MIT, Cambridge, USA | August 2014
- Lunch talk, Harvard CfA, Cambridge, USA | August 2014

Talks in international conferences

- *A low-mass black hole in GX339-4?*, HEAD meeting 2017, Sun Valley, ID, USA | August 2017
- *A low-mass black hole in GX339-4?*, EWASS 2017, Prague, Czech Republic | June 2017
- *NIR spectroscopy of ULXs*, Breaking the limits: Super-Eddington accretion onto compact objects, Arbatax, Italy | September 2016
- *NIR spectroscopy of ULXs*, ULXs and their environments, Strasbourg, France | June 2016
- *Dynamical mass measurements of ULXs in the near-infrared*, NAC 2015, Nunspeet, Netherlands | May 2015
- *Dynamical mass measurements of ULXs in the near-infrared*, Black holes in dense star clusters, Aspen, USA | January 2015

- *Near-infrared counterparts of ULXs - towards dynamical mass measurements*, AAS HEAD 14th meeting, Chicago, USA | August 2014
- *Near-infrared counterparts of ULXs - towards dynamical mass measurements, 99 years of Black Holes: from Astronomy to Quantum Gravity*, Potsdam, Germany | May 2014
- *Near-infrared observations of ULXs*, ULXs: Implications for our view of the Universe, Lorentz center workshop, Leiden, Netherlands | April 2014
- *Investigating the nature of the brightest ULXs*, X-ray binaries: Celebrating 50 years since the discovery of Sco X-1, Cambridge, USA | July 2012
- *ULXs – Do they contain intermediate-mass black holes?*, George Smoots masterclass, Lindau Nobel Laureate Meeting, Lindau, Germany | July 2012

Participation in schools

- SIGRAV school on astrophysical black holes, Como, Italy | May 2012
- NOVA fall school, Dwingeloo, Netherlands | September 2011

Teaching and mentoring

- Supervised Summer Undergraduate Research Fellow Maya Fuller at Caltech | summer 2017
- Teaching assistant 'Newtonian Cosmology' (1st year B.Sc. course, Radboud Universiteit Nijmegen) | April-June 2013
- Teaching assistant 'Nuclear evolution of the Universe' (3rd year B.Sc. course, Radboud Universiteit Nijmegen) | April-June 2013
- Teaching assistant 'Chemical evolution of the Universe' (3rd year B.Sc. course, Radboud Universiteit Nijmegen) | April-June 2012
- Teaching assistant Huygenscollege 'Het Heelal' (1st year B.Sc. course, Radboud Universiteit Nijmegen) | January-April 2012
- Private tutor physics/math for high school students | 2008-2011

Outreach

I have participated in four Open House events at SRON (2012-2015) by giving public lectures and organizing 'build your own spectrograph' sessions. I have also given presentations at several introductory events for prospective students at the Radboud University Nijmegen and assisted at the Dutch Astronomy Olympiad for high school students in 2015. In December 2015 I gave a public lecture on black holes at the Astronomical Observatory in Leiden. At Caltech I participated as a telescope volunteer and panel member at several public lecture/stargazing events and as a speaker at Astronomy on Tap Pasadena (June 2017). I also volunteered at the 'Explore JPL' events in 2016 and 2017.

Refereed publications (first author)

- M. Heida, P. G. Jonker, M. A. P. Torres and A. Chiavassa: *The mass function of GX 339-4 from spectroscopic observations of its donor star*, ApJ, 2017, 846, 132
- M. Heida, P. G. Jonker, M. A. P. Torres, T. P. Roberts, D. J. Walton, D.-S. Moon, D. Stern and F. A. Harrison: *Keck/MOSFIRE spectroscopy of five ULX counterparts*, MNRAS, 2016, 459, 771
- M. Heida, P. G. Jonker and M. A. P. Torres: *Discovery of a second outbursting hyperluminous X-ray source*, MNRAS Letters, 2015, 454, 26
- M. Heida, M. A. P. Torres, P. G. Jonker, M. Servillat, S. Repetto, T. P. Roberts, D. J. Walton, D.-S. Moon and F. A. Harrison: *Discovery of a red supergiant counterpart to RX J004722.4-252051, a ULX in NGC 253*, MNRAS, 2015, 453, 35
- M. Heida, P. G. Jonker, M. A. P. Torres, E. Kool, M. Servillat, T. P. Roberts, P. J. Groot, D. J. Walton, D.-S. Moon and F. A. Harrison: *Near-infrared counterparts of ultraluminous X-ray sources*, MNRAS, 2014, 442, 1054
- M. Heida, P. G. Jonker, M. A. P. Torres, T. P. Roberts, G. Miniutti, A. C. Fabian and E. M. Ratti: *VLT/FORS2 observations of four high-luminosity ULX candidates*, MNRAS, 2013, 433, 681
- M. Heida, P. G. Jonker, M. A. P. Torres and S. Mineo: *Accurate positions for the ultraluminous X-ray sources NGC 7319-X4 and NGC 5474-X1 and limiting magnitudes for their optical counterparts*, MNRAS, 2012, 424, 1563

Other refereed publications

- M. Brightman, F. A. Harrison, F. Fürst, M. J. Middleton, D. J. Walton, D. Stern, A. C. Fabian, **M. Heida**, D. Barret and M. Bachetti: *Constraints on the magnetic field strength of a neutron star ultraluminous X-ray source*, submitted to Nature
- P. A. Evans et al.: *Swift and NuSTAR observations of GW170817: detection of a blue kilonova*, Science, 2017, in press
- B. P. Abbott et al.: *Multi-messenger observations of a binary neutron star merger*, ApJ letters, 2017, 848, 12
- K. M. López, **M. Heida**, P. G. Jonker, M. A. P. Torres, T. P. Roberts, D. J. Walton, D.-S. Moon and F. A. Harrison: *A systematic search for near-infrared counterparts of nearby ultraluminous X-ray sources (II)*, MNRAS, 2017, 469, 671
- R. Lau, **M. Heida**, M. Kasliwal and D. J. Walton: *First detection of mid-infrared variability from an ultraluminous X-ray source Holmberg II X-1*, ApJ letters, 2017, 838, 17
- D. J. Walton, F. Fürst, M. Bachetti, D. Barret, M. Brightman, A. C. Fabian, N. Gehrels, F. A. Harrison, **M. Heida**, M. J. Middleton et al.: *A 78 day X-ray period detected from NGC 5907 ULX1 by Swift*, ApJ letters, 2016, 827, 13

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- P. G. Jonker, A. Glennie, **M. Heida**, T. Maccarone, S. Hodgkin, G. Nelemans, J. C. A. Miller-Jones, M. A. P. Torres, R. Fender: *Discovery of a New Kind of Explosive X-Ray Transient near M86*, *ApJ*, 2013, 779, 14
 - P. G. Jonker, **M. Heida**, M. A. P. Torres, J. C. A. Miller-Jones, A. C. Fabian, E. M. Ratti, G. Miniutti, D. J. Walton, T. P. Roberts: *The Nature of the Bright ULX X-2 in NGC 3921: A Chandra Position and HST Candidate Counterpart*, *ApJ*, 2012, 758, 28
 - P. G. Jonker, M. A. P. Torres, A. C. Fabian, **M. Heida**, G. Miniutti and D. Pooley: *A bright off-nuclear X-ray source: a type II supernova, a bright ULX or a recoiling supermassive black hole in CXO J122518.6+144545*, *MNRAS*, 2010, 407, 645