

Personal Information

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Research Interests

The physics of accretion, jets and disk winds
X-ray binaries as probes of binary evolution
The impact of outflows on the interstellar medium
Probing ultra-dense matter through observations of neutron stars

Research Positions

2020–present Assistant professor (Universitair Docent), University of Amsterdam
2016–2021 Vidi research group leader, University of Amsterdam
2014–2016 Marie Curie research fellow, University of Cambridge, UK
2011–2014 Hubble research fellow, University of Michigan, USA
2010–2011 Postdoctoral researcher, University of Amsterdam

Education

2006–2010 PhD in Astronomy, University of Amsterdam
Thesis title: *Exploring sub-luminous X-ray binaries*, advisor: prof. R. Wijnands
2004–2006 Master degree in Astronomy (*cum laude*), University of Amsterdam

Grants and Fellowships

2020 XS grant from NWO – 50 000 euro
2015 Vidi grant from NWO (5 years) – 800 000 euro
2015 St John’s College Research Fellowship (5 years) in Cambridge, UK
2014 Marie Skłodowska-Curie fellowship from the EC (2 years) – 280 000 euro
2011–2014 Observing grants from Hubble, Chandra, XMM-Newton, Swift – 605 000 euro
2011 Hubble fellowship from NASA (3 years) – 340 000 euro

Scientific Networks and Academy Memberships

2021–2022 Advisory team for science with the Wide Field Camera of the Athena X-ray satellite
2021–2022 Advisory working group for time-domain astronomy with the Chandra X-ray satellite
2021–present Dutch MOSAIC consortium (2nd generation ELT instrumentation)
2018–present Member of the International Astronomical Union (IAU)
2018–present Chair of the accreting neutron star working group of the MeerLICHT telescope
2017–present Joint Institute for Nuclear Astrophysics, Center for the Evolution of the Elements
International partner, network for studying nuclear elements in the universe

Management Responsibilities

2022–2023 Coordination and writing team scientific self-evaluation Anton Pannekoek Institute
2021–present Management team of the Anton Pannekoek Institute for Astronomy
2021–present Curriculum committee Science, Technology & Innovation, University of Amsterdam
2020–present Deputy chair of the Dutch science network NOVA-NW3
2020–2022 Exam committee Physics & Astronomy program at the University of Amsterdam
2017–2022 Management Committee of the European neutron-star network PHAROS
2009–present Leader of the Swift Galactic center X-ray monitoring team of the Swift satellite
2007–2009 Secretary of the Dutch national committee of astronomy education (LOCNOC)

Overview of Research Output

Publication Record Summary

First author refereed publications	37 (10 Letters, 4 reviews)
First author non-refereed publications	65
Co-author refereed publications	151 (27 Letters, 5 reviews)
Co-author non-refereed publications	138

Talk Record Summary

Invited talks international conferences	32
Colloquia and seminars	28
Contributed talks conferences	19

Telescope Time Acquisition Record Summary

PI accepted observing proposals	190
Co-I accepted observing proposals	184
Facilities used as PI:	
X-ray	Chandra, XMM-Newton, NuSTAR, Swift, RXTE
UV	Hubble Space Telescope
Optical/nIR	VLT, SMARTS, INT, Gemini, Magellan
Radio	VLA, ATCA

Organization of Scientific Meetings Summary

SOC co-chair, LOC	<i>100 years of astronomy research at the Anton Pannekoek Institute</i> Held in Amsterdam, June 2022. International conference, 50 participants
SOC chair, LOC	<i>From Winds to Jets: The Role of Outflows in X-ray Binaries</i> Held in Amsterdam, July 2019. International workshop, 65 participants
SOC chair, LOC	<i>ICONS: Investigating the Crust of Neutron Stars</i> Held in Amsterdam, April 2019. International workshop, 40 participants
SOC, LOC, treasurer	<i>A decade of accreting millisecond X-ray pulsars</i> Held in Amsterdam, April 2008. International workshop, 60 participants
SOC (24)	<i>A total of 24 other international conferences and workshops, see CV Appendix</i> Since 2009, various countries, 50–250 participants each
LOC (3)	<i>A total of 3 other international conferences, see CV Appendix</i> Held in 2009, 2011, 2022 in the Netherlands, 200 participants each

Editorial and Panel Work

Journal referee	Science, Astrophysical Journal (ApJ), Astronomy & Astrophysics (A&A) Monthly Notices of the Royal Astronomical Society (MNRAS), New Astronomy
Co-editor	<i>A decade of accreting millisecond X-ray pulsars</i> (2008) American Institute of Physics Journals Conference Proceedings 1068
Fellowship panels	Research Council Academy of Finland (2021) NASA Hubble Fellowship Program (NHFP, 2018) NASA Earth Space and Science Fellowship (NESSF, 2013)
Time allocation panels	XMM (chair, 2022, 2023), ESO (2020,2021), INTEGRAL (2019, 2020), AstroSAT (2017, 2018), ING (2017, 2018), Chandra (2014, 2018), Gemini (2013)

Impression of Press

2022	ESO press release <i>Astronomers discover micrometeoroids, a new kind of stellar explosion</i>
2022	NOVA press release <i>Black hole in the centre of the Milky Way unpredictable</i>
2021	Dutch podcast <i>Bijvangst: De sterrenkundigen, de ninja en de onbereikbare telescoop</i>
2020	Athena science nugget <i>Accretion disks torn apart by magnetic neutron stars</i>
2020	AAS research highlight <i>Jet-setting in the infrared</i>
2019	Dutch radio interview <i>Met het oog op morgen: Onmogelijk zwart gat ontdekt</i>
2018	NRAO press release <i>VLA discovers jet coming from wrong kind of star</i>
2017	NOVA press release <i>High-magnetic field neutron stars can launch jets</i>
2017	ESA/NASA press release <i>Mind the Gap: Rapid Burster behaviour explained</i>

Impression of Press – Continued

2014	Press conference American Astronomical Society (AAS), Washington DC, USA <i>On the watch for a revival of the Milky Way’s supermassive black hole</i>
2014	NASA press release <i>NASA’s Swift catches X-ray action at Milky Way’s center</i>
2014	Dutch newspaper (NRC) interview ‘Gaswolk op weg naar het grote zwarte gat’
2014	High-energy astrophysics picture of the week <i>Action at the Galactic center</i>
2012	German radio interview <i>Snacks für das Schwarze Loch</i>

Selection of Outreach

2021	<i>Viva Fysica</i> for high-school students and teachers. University of Amsterdam
2019–2020	<i>Sounds of Interstellar Space</i> with the jazz combo TRIFID. Different locations in NL Concert and lecture series, http://www.soundsofinterstellarspace.nl
2019	<i>Enrichment project</i> for girls in 2nd grade, Cygnus gymnasium, Amsterdam, NL
2018	<i>Astronomy Olympiad</i> lecturer, highschool students. University of Amsterdam, NL
2017–present	<i>Public evening lectures</i> . Anton Pannekoek Institute, University of Amsterdam, NL
2016	<i>STEM Subject Days</i> . St John’s College. Cambridge, UK Outreach events for year-12 students (aged 15–18) from state school backgrounds
2016	<i>Public evening lectures</i> . Institute of Astronomy, University of Cambridge, UK
2012–2013	<i>FEMMES (Females Excelling More in Math, Engineering and Science)</i> . Activities for girls in secondary schools from underserved areas. Ann Arbor, USA
2008–2011	<i>Interviews/lectures for scholars in secondary school</i> . Amsterdam, NL

Overview of Teaching Output

Supervision of Postdoc Projects

2019–2020	Dr. A. Parikh, University of Amsterdam Primary supervisor, funded by my Vidi research grant Now Quantitative Risk Manager at ABN Amro bank
2016–2019	Dr. J. Hernández Santisteban, University of Amsterdam Primary supervisor, funded by my Vidi research grant Now Lecturer at the University of St. Andrews, Schotland

Supervision of PhD Projects

2021–present	Ms. S. Fijma, University of Amsterdam. Primary supervisor, funded on start-up grant.
2020–present	Mr. D. Hewitt, University of Amsterdam. Co-promotor, promotor prof. J. Hessels
2020–present	Mr. M. Snelders, University of Amsterdam. Co-promotor, promotor prof. J. Hessels
2016–2020	Dr. J. van den Eijnden, University of Amsterdam. Primary supervisor, funded on Vidi grant. Now Warwick Prize Fellow at the University of Warwick, UK
2019	Mr. K. Alizai, University of Amsterdam. Promotor J. Chenevez, graduated in 2021. Exchange visit (4 months) from the Technical University of Denmark
2015–2019	Dr. A. Parikh, University of Amsterdam. Co-promotor, promotor R. Wijnands Now Quantitative Risk Manager at ABN Amro bank
2015–2019	Dr. A. Rouco Escorial, University of Amsterdam. Co-promotor, promotor R. Wijnands Now ESA postdoctoral fellow at ESAC Madrid, Spain
2009–2013	Dr. M. Armas Padilla, University of Amsterdam. Co-supervisor, promotor R. Wijnands Now La Caixa independent postdoctoral fellow at the IAC Tenerife, Spain

Supervision of Master and Undergraduate Research Projects

2016–present	19 MSc projects, 17 BSc projects, see CV Appendix. University of Amsterdam
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Lecturing

2022–present	Lecturer and coordinator <i>Proposal writing</i> , MSc students. University of Amsterdam
2020	Lecturer <i>Structure and Evolution of Stars</i> , MSc students. University of Amsterdam
2020	University Teaching Degree (BKO certificate). University of Amsterdam
2019–present	Lecturer and coordinator <i>Astrophysics</i> , BSc students. University of Amsterdam
2016–present	Regular guest lecturer, different courses, see CV Appendix. University of Amsterdam

Full List of Invited talks at International Conferences

- 2023 May: Microquasar workshop. Heraklion (Crete), Greece
Invited review: *Spectral evolution of microquasars during outburst: what are the issues?*
- 2022 October: Two decades of high-energy astronomy with INTEGRAL. Darmstad, Germany
Invited review: *Studying X-ray binaries with future X-ray missions*
 August: Black hole accretion workshop. Charleston (South Carolina), USA
Invited talk: *Jets from accreting neutron stars*
- 2021 October: Swift senior review strategy workshop. Online
Invited review: *Galactic X-ray transients*
 September: Micro-quasar workshop. Cagliari (Sardinia), Italy
Invited review: *The physics of accretion and ejection*
- 2020 October: Chandra frontiers of time domain science. Online.
Invited review: *Accretion and outflows in neutron star low-mass X-ray binaries*
 June: EAS 2020, XMM-Newton: Current scientific highlights and future prospects. Online.
Invited review: *Low-mass X-ray binaries and transitional millisecond pulsars*
- 2019 December: Texas 2019, Relativity at work: discs, jets and magnetic fields. Portsmouth, UK
Review: *The neutron star jet and magnetic field paradigm*
 June: Connecting thermonuclear burst research to a wider community. Leiden, NL
Invited review: *Observational signatures of X-ray bursts affecting accretion in X-ray binaries*
- 2018 August: Chandra workshop, Accretion in stellar systems. Boston, USA
Invited review: *Outflows from X-ray binaries*
- 2017 June: EWASS symposium. Prague, Czech republic
Invited review: *Crust heating and cooling of transiently accreting neutron stars*
 February 2017: Nuclear reactions in superdense matter – Laboratory to stars. Bern, Switzerland
Invited talk: *Crust constraints from observing neutron star low-mass X-ray binaries in quiescence*
 January: The disk-magnetosphere interaction for transitional pulsars. Bern, Switzerland
Invited talk: *Low-level accretion in neutron star low-mass X-ray binaries*
- 2016 October: Gamma-ray astrophysics in multi-wavelength perspective. Amsterdam, NL
Invited review: *Low-level accretion in neutron star LMXBs*
 May: Stellar remnants at the junction. Junction, Texas, USA
Invited review: *Compact objects accreting at low mass-accretion rates*
 January: Transient thinkshop 2016. Bormio, Italy
Invited review: *The X-ray view of Galactic X-ray binaries*
- 2015 August: The zoo of accreting compact objects workshop. Leiden, NL
Invited review: *The quiescent properties of neutron star low-mass X-ray binaries*
 July: Paving the way to simultaneous multi-wavelength astronomy. Leiden, NL
Invited talk: *Multi-wavelength observations and modeling of Sgr A**
 June: 40 years of X-ray bursts. Madrid, Spain
Invited talk: *The delicate connection between X-ray bursts and the accretion flow*
 May: Coronae in the flashlight. Beijing, China
Invited talk: *NuSTAR observations of the changing accretion morphology during X-ray bursts*
- 2014 December: Probing deep inside the neutron star crust. Bern, Switzerland
Invited talk: *New observational results in neutron star crust cooling*

- December: Swift mission conference, celebrating ten years. Rome, Italy
Invited talk: *A Swift legacy: The X-ray monitoring campaign of the Galactic center*
- January: American Astronomical Society's winter meeting. Washington DC, USA
Invited talk: *News from the Galactic center: daily X-ray monitoring observations with Swift*
- 2013 December: European Space Research and Technology Center (ESTEC). Noordwijk, NL
Invited talk: *Slowly accreting neutron stars and black holes*
- October: Swift mission conference. State College, USA
Invited talk: *A Swift legacy: The X-ray monitoring campaign of the Galactic center*
- September: Probing deep inside the neutron star crust. Bern, Switzerland
Invited talk: *An update on the crust cooling curves of EXO 0748–676 and Terzan 5 X-2*
- September: Probing deep inside the neutron star crust. Bern, Switzerland
Invited talk: *Evidence of crust cooling in short-outburst transients?*
- March: Annual Hubble fellowship symposium. STScI, Baltimore, USA
Invited talk: *Feeding the supermassive black hole in the center of the Milky Way Galaxy*
- 2012 October: Nuclear astrophysics town meeting. Detroit, USA
Invited talk: *Heating and cooling of transiently accreting neutron stars*
- 2011 March: Mapping neutron stars with Type-I X-ray bursts. Bern, Switzerland
Invited talk: *Long thermonuclear bursts from hydrogen accretors*
- 2010 July: X-ray bursts and burst oscillations. Leiden, NL
Invited talk: *X-ray bursters accreting at low luminosities*
- 2009 May: Defining the neutron star crust. Santa Fe, USA
Invited talk: *Crustal cooling of EXO 0748–676 and XTE J1701–462*

Full List of Colloquia and Seminars

- 2022 October: Anton Pannekoek Institute. Amsterdam, NL
Seminar: *Crazy Jet Experiment*
- 2020 February: Instituto de Astrofísica de Canarias (IAC). Santa Cruz (Tenerife), Spain
Seminar: *The notorious LB-1*
- 2019 June: L'Institut de Recherche en Astrophysique et Planétologie (IRAP). Toulouse, France
Colloquium: *The important role of outflows in X-ray binaries*
- February: European Space Astronomy Center (ESAC). Madrid, Spain
Colloquium: *Radio jets launched by strongly magnetic neutron stars*
- January: Netherlands Institute for Space Research (SRON). Utrecht, NL
Colloquium: *The important role of outflows in X-ray binaries*
- 2018 October: University of Amsterdam. Amsterdam, NL
Colloquium: *The launching, mass loss and power of X-ray binary outflows*
- April: New York University Abu Dhabi. Abu Dhabi, United Arab Emirates
Colloquium: *Probing dense matter physics with neutron stars*
- 2017 January: Dutch astronomers member's council meeting. Amsterdam, NL
Colloquium: *The appetite of a neutron star*
- 2016 October: IoA seminar. University of Cambridge, Cambridge, UK
Seminar: *Probing the physics of neutron stars with X-ray observations*
- July: X-ray group seminar. University of Cambridge, Cambridge, UK
Seminar: *An in-depth study of a neutron star accreting at low Eddington rate*
- April: X-ray group seminar. University of Cambridge, Cambridge, UK
Seminar: *Disk reflection and a possible disk wind during the soft state of 1RXS J180408.9–342058*
- 2015 November: Gravity seminar. University of Southampton. Southampton, UK
Seminar: *Probing fundamental physics with accreting neutron stars*

- November: X-ray group seminar. University of Cambridge, Cambridge, UK
Seminar: *NuSTAR observations of neutron star low-mass X-ray binaries*
- October: Sabancı University. Istanbul, Turkey
Seminar: *Crust cooling of neutron stars as a probe of fundamental physics*
- July: X-ray group seminar. University of Cambridge, Cambridge, UK
Seminar: *Probing accretion flows with thermonuclear X-ray bursts*
- February: IoA seminar. University of Cambridge, Cambridge, UK
Seminar: *Monitoring the supermassive black hole in the Milky Way Galaxy*
- 2014 October: High-energy astrophysics seminar. University of Michigan, Ann Arbor, USA
Seminar: *Low-level accretion flows in X-ray binaries*
- October: Physics seminar. University of Michigan, Ann Arbor, USA
Seminar: *Neutron stars as probes of fundamental physics*
- April: X-ray group seminar. University of Cambridge, Cambridge, UK
Seminar: *Peeking into the crust of neutron stars*
- March: Astrophysics seminar. University of Southampton, Southampton, UK
Seminar: *Probing fundamental physics with transiently accreting neutron stars*
- January: Max Planck institut für Extraterrestrische physik, Garching, Germany
Colloquium: *Probing fundamental physics with transiently accreting neutron stars*
- 2013 March: Annual Hubble fellowship symposium. STScI, Baltimore, USA
Seminar: *Feeding the supermassive black hole in the center of the Milky Way Galaxy*
- 2012 September: Astrophysics colloquium. Michigan State University, East Lansing, USA
Colloquium: *Probing fundamental physics with transiently accreting neutron stars*
- April: Astrophysics seminar. University of Michigan, Ann Arbor, USA
Seminar: *Probing fundamental physics with transiently accreting neutron stars*
- March: Annual Hubble fellowship symposium. STScI, Baltimore, USA
Seminar: *Probing fundamental physics with transiently accreting neutron stars*
- February: Astrophysics seminar. University of Wisconsin, Milwaukee, USA
Seminar: *Probing fundamental physics with transiently accreting neutron stars*
- 2009 November: Astrophysics colloquium. University of Leicester, UK
Colloquium: *Crust cooling of accretion heated neutron stars*

Full List of Contributed Conference Talks

- 2019 December: Texas 2019, Relativity at work: neutron stars. Portsmouth, UK
Talk: *Probing the interior of transiently accreting neutron stars*
- 2014 August: The 40th COSPAR Scientific Assembly. Moscow, Russia
Talk: *An accretion disk swept up by a powerful thermonuclear X-ray burst*
- August: The 40th COSPAR Scientific Assembly. Moscow, Russia
Talk: *The Swift Monitoring Campaign of the Galactic center*
- March: Structure and Signal of Neutron Stars, from Birth to Death. Florence, Italy
Talk: *Probing the crusts of transiently accreting neutron stars*
- 2013 November: JSI 2013 workshop, Putting Accretion Theory to the Test. Annapolis, USA
Talk: *Swift J1910.2–0546: A new perspective on accretion flows*
- September: Chandra XVP meeting 2013. Santa Fe, USA
Talk: *Update on the Swift monitoring campaign of the Galactic Center*
- April: High Energy Astrophysics Division (HEAD) 2013. Monterey, USA
Talk: *The Swift monitoring campaign of Sagittarius A**
- March: Compact Objects in Michigan. Wayne State University, Detroit, USA
Talk: *The Swift monitoring campaign of Sagittarius A**

- 2012 August: 28th IAU General Assembly, Beijing, China
Talk: *A new breakthrough in understanding the crusts of neutron stars*
 August: 28th IAU General Assembly, Beijing, China
Talk: *Seven years of nearly-daily observations of Sgr A* with Swift*
 July: X-ray Binaries, Celebrating 50 years since the Discovery of Sco X-1. Boston, USA
Talk: *Probing Fundamental Physics with Transiently Accreting Neutron Stars*
 June: CompStar 2012, The physics of compact stars. Tahiti, French Polynesia
Talk: *A new breakthrough in understanding the crusts of neutron stars*
- 2011 October: Swift mission conference. Clemson, USA
Talk: *Rare thermonuclear X-ray bursts caught by Swift*
 September: High Energy Astrophysics Division (HEAD) 2011. Newport (RI), USA
Talk: *Probing fundamental physics with transiently accreting neutron stars*
 July: International conference Physics of Neutron Stars 2011. St. Petersburg, Russia
Talk: *Transiently accreting neutron stars: peeking into their crusts*
- 2010 March: High Energy Astrophysics Division (HEAD) 2010. Hawaii Big Island, USA
Talk: *Very-faint X-ray binaries*
- 2009 November: Swift mission conference: Celebrating five years. Penn State, USA
Talk: *Swift as a key tool to study sub-luminous X-ray transients*
 June: NOVA Network III Science Meeting. Amsterdam, NL
Talk: *Crust cooling of accretion heated neutron stars*
- 2008 July: The 37th COSPAR Scientific Assembly. Montreal, Canada
Talk: *Sub-luminous X-ray transients near the Galactic center*

Full List of Conference Organization

- 2023 July: **SOC** *From dormant to ultra-luminous compact objects in X-ray binaries*. Kraków, Poland
 June: **SOC** *The first Vasto accretion meeting*. Vasto, Italy
- 2022 June: **SOC chair** *Celebrating 100 years of astronomy research at the API*. Amsterdam, NL
 May: **SOC** *The multi-messenger physics and astrophysics of neutron stars*. Rome, Italy
- 2021 May: **SOC** *Nederlandse Astronomen Conferentie*. Online
- 2020 August: **SOC** *Accretion on All Scales*. Sydney, Australia [cancelled due to covid-19]
 August: **SOC** *Accretion and Ejection in Galactic Compact Objects*. Sydney, Australia [cancelled]
- 2019 October: **SOC** *New Horizons in Galactic Center Astronomy and Beyond*. Yokohama, Japan
 July: **SOC chair** *From Winds to Jets: The Role of Outflows in X-ray Binaries*. Amsterdam, NL
 May: **SOC chair** *Delving into the neutron star crust*. Amsterdam, NL
- 2018 October: **SOC** *Time-Domain Astrophysics with Swift*. Clemson, USA
 June: **SOC** *Bursts and nuclei*. Prato, Italy
- 2017 October: **SOC** *Fermi 2017*. Garmisch-Partenkirchen, Germany
 September: **SOC** *La Gomera Accretion Week*. La Gomera, Spain
 June: **SOC** *The X-ray Universe 2017*. Rome, Italy
 June: **SOC** *Exploring Neutron Star Structure by Timing and Spectroscopy*. Prague, Czech republic
 February: **SOC** *The New Era of X-ray Astronomy*. London, UK
- 2016 August: **SOC** *Chandra Science for the Next Decade*. Boston, USA
 August: **SOC** *Universal Accretion*. Aspen, USA
 May: **SOC** *Stellar remnants*. Junction, USA
 August: **SOC** *Accretion in neutron star and black hole X-ray binaries* (cancelled). Istanbul, Turkey

- August: **SOC** *Crust cooling in accreting neutron stars and magnetars* (cancelled). Istanbul, Turkey
- 2015 June: **SOC** *40 years of X-ray bursts*. Madrid, Spain
- 2011 September: **LOC** *First LOFT Science Meeting*. Amsterdam, NL
- 2009 May: **LOC** *Nederlandse Astronomen Conferentie*. Kerkrade, NL
- 2008 April: **SOC and LOC treasurer** *A decade of accreting millisecond X-ray pulsars*. Amsterdam, NL

Full List of Observing Grants

- 2015 **Chandra**, *Probing the physics of neutron stars using Terzan 5*, USD 27 000
Swift, *A Swift legacy: the monitoring campaign of the Galactic Center*, USD 40 000
- 2014 **HST**, *The nature of the transient X-ray binary Swift J1910.2–0546*, USD 50 000
HST, *The evolutionary link between LMXBs and radio millisecond pulsars*, USD 50 000
Swift, *A Swift legacy: the monitoring campaign of the Galactic Center*, USD 40 000
Chandra, *The nature of the transient X-ray binary Swift J1910.2–0546*, USD 37 000
- 2013 **HST**, *The evolution and accretion morphology of Swift J1357.2–0933*, USD 51 000
Swift, *A Swift legacy: the monitoring campaign of the Galactic Center*, USD 37 000
Swift, *Crust cooling of accretion-heated neutron stars*, USD 36 000
Chandra, *Observing a cooling neutron star crust in Terzan 5*, USD 57 000
XMM-Newton, *The peculiar X-ray burster SAX J2224.9+5421*, USD 59 000
- 2012 **HST**, *The X-ray and UV spectra of EXO 0748–676*, USD 49 000
Chandra, *The X-ray and UV spectra of EXO 0748–676*, USD 38 000
Chandra, *A snapshot survey of Galactic Be/X-ray transients in quiescence*, USD 41 000
Chandra, *Observations of a cooling neutron star crust in Terzan 5*, USD 49 000
- 2011 **Chandra**, *Quiescent monitoring of the 11 Hz X-ray pulsar in Terzan 5*, USD 46 000

Full List of Accepted Observing Proposals as Principal Investigator

Radio PI Proposals

<i>Proposal Description</i>	<i>Observatory/cycle</i>	<i>Time</i>
A young stripped star in the intriguing binary LB-1?	VLA 2020B	2 hours
Swift/VLA monitoring of a giant Be/X-ray binary outburst	VLA 2019AB	6 hours
Jet outflows from a magnetic propeller	VLA 2017B	5 hours
The accretion flow properties of sub-luminous X-ray binaries	VLA 2017A	10 hours
X-ray/radio correlation for neutron star X-ray binaries	VLA 2014A	38 hours
X-ray/radio correlation for neutron star X-ray binaries	VLA 2013A	9 hours
The accretion-jet connection for neutron stars	ATCA 2017B	84 hours
DDT to search for the radio counterpart of GRO J1744–28	ATCA 2017A	8 hours
The accretion-outflow connection for neutron stars	ATCA 2016A	12 hours

Optical/near-infrared PI Proposals

<i>Proposal Description</i>	<i>Observatory/cycle</i>	<i>Time</i>
An accretion disk wind across the electromagnetic spectrum	VLT 2022A	3 hours
Mapping accretion disk winds across the electromagnetic spectrum	VLT 2020A	4 hours
Feedback from low-mass X-ray binaries into the ISM	VLT 2019A	3 hours
Unravelling unusual accreting neutron stars and black holes	VLT 2018A	3 hours
Unravelling unusual accreting neutron stars and black holes	VLT 2017A	3 hours
DDT for a rare chance to identify an unusual black hole system	NTT 2019B	4.5 hours
Feedback from low-mass X-ray binaries into the ISM	INT 2018B	7 nights
Disruption of a gas cloud by the supermassive black hole Sgr A*	Magellan 2014B	1 night
Disruption of a gas cloud by the supermassive black hole Sgr A*	Magellan 2014A	1 night
Infrared spectroscopy of sub-luminous neutron star X-ray binaries	Magellan 2014A	3 nights
Disruption of a gas cloud by the supermassive black hole Sgr A*	Magellan 2013B	4 nights
Infrared imaging of sub-luminous neutron star X-ray binaries	Magellan 2013A	3 nights
Optical spectroscopy of MAXI J1305–704 and Cen X-4	Magellan 2012A	1 nights
Sub-luminous X-ray binaries TOO	SMARTS 2009B	0.4 nights

Ultraviolet PI Proposals

<i>Proposal Description</i>	<i>Observatory/cycle</i>	<i>Time</i>
An accretion disk wind across the electromagnetic spectrum	HST cycle 29	6 orbits
DDT for UV spectroscopy of a short-period black hole in outburst	HST cycle 24	4 orbits
A radio millisecond pulsar in a low-mass X-ray binary?	HST cycle 24	4 orbits
The nature of the transient black hole candidate Swift J1910.2–0546	HST cycle 22	2 orbits
The evolutionary link between LMXBs and MSRPs	HST cycle 22	6 orbits
Evolution and accretion morphology of short-period black hole	HST cycle 21	9 orbits
The quiescent UV spectrum of the neutron star EXO 0748–676	HST cycle 20	9 orbits

X-ray PI Proposals

<i>Proposal Description</i>	<i>Observatory/cycle</i>	<i>Time</i>
An unexplored regime of neutron star heating and cooling	Chandra AO22	500 ks
An unexplored regime of neutron star heating and cooling	Chandra AO20	90 ks
DDT on outflows from a nearby super-Eddington accretor	Chandra AO19	25 ks
The very cold neutron star in HETE J1900.1–2455	Chandra AO19	55 ks
New progress in understanding the crusts of neutron stars	Chandra AO18	60 ks
DDT on the very cold neutron star in HETE J1900.1–2455	Chandra AO17	30 ks
Probing physics of neutron stars using Terzan 5	Chandra AO17	135 ks
DDT on the accretion disk wind in 1RXS J180408.9–342058	Chandra AO16	30 ks
The nature of the transient X-ray binary Swift J1910.2–0546	Chandra AO16	45 ks
A cooling neutron star crust in Terzan 5	Chandra AO15	105 ks
Neutron star X-ray binary EXO 0748–676 in quiescence	Chandra AO15	45 ks
A cooling neutron star crust in Terzan 5	Chandra AO14	135 ks
Quiescent monitoring 11-Hz X-ray pulsar in Terzan 5	Chandra AO13	100 ks
DDT to detect a cooling neutron star crust in Terzan 5	Chandra AO12	40 ks
Neutron star crust cooling EXO 0748–676	Chandra AO11–AO12	40 ks
Neutron star crust cooling TOO on HETE J1900.1–2455	Chandra AO11–AO12	90 ks
Crust cooling TOO HETE J1900.1–2455 + Swift J1626.6–5156	Chandra AO9–AO10	120 ks
DDT to localize XMMUJ174716.1–281048	Chandra AO8	1 ks
Linking jet suppression to accretion geometry	NuSTAR AO4	60 ks
Testing disk truncation for accreting neutron stars	NuSTAR AO4	60 ks
DDT on jet suppression and accretion geometry	NuSTAR AO3	20 ks
DDT on the “moding” of the transitional pulsar PSR J1023+0038	NuSTAR AO3	25 ks
An accretion disk wind at low Eddington rate?	NuSTAR AO2	75 ks
DDT to search for disk reflection in 4U 1608–52	NuSTAR AO1	40 ks
How neutron stars accrete at low Eddington rates	NuSTAR AO1	75 ks
DDT to search for disk reflection in MXB 1659–28	NuSTAR AO1	50 ks
DDT observations of various transient X-ray binaries, 77 in total	Swift AO6–AO15	362 ks
The nature and accretion flow of sub-luminous X-ray binaries	Swift AO19	50 ks
Swift/VLA monitoring of a giant Be/X-ray binary outburst	Swift AO15	20 ks
Testing disk truncation for accreting neutron stars	Swift AO14	11 ks
X-ray monitoring of Sgr A* during the Event Horizon Telescope	Swift AO13	52 ks
The accretion flow properties of sub-luminous X-ray binaries	Swift AO13	30 ks
Galactic center monitoring campaign	Swift AO9–AO19	248 ks
Neutron star crust cooling TOO	Swift AO6–AO13	60 ks
Galactic center monitoring campaign	Swift AO6–AO8	81 ks
An accretion disk wind across the electromagnetic spectrum	XMM AO21	120 ks
The nature of the compact accretor in exotic X-ray binaries	XMM AO17	100 ks
An accretion disk wind at low Eddington rate?	XMM AO15	70 ks
Neutron star crust cooling in 1RXS J180408.9–342058	XMM AO15	70 ks
DDT to search for crust cooling in 1RXS J180408.9–342058	XMM AO14	30 ks
The nature of the transient black hole candidate Swift J1910.2–0546	XMM AO13	60 ks
DDT to search for crust cooling in RX J1709–267	XMM AO12	30 ks
Peculiar X-ray burster SAX J2224.9+5421 in quiescence	XMM AO10 + AO12	50 ks
Accreting millisecond pulsar Swift J1749.4–2807 in quiescence	XMM AO9 + AO10	100 ks
Sub-luminous X-ray binary AX J1754.2–2754	XMM AO7 + AO9	35 ks
Sub-luminous X-ray binaries in outburst	RXTE AO13–AO14	100 ks

Full Overview of Teaching Activities

Lecture series

- 2022–present Lecturer and coordinator *Proposal writing*, MSc students. U. of Amsterdam
2020 Co-lecturer *Structure and Evolution of Stars*, MSc students. U. of Amsterdam
2020–present Lecturer and coordinator *Astrophysics*, BSc students (year 2). U. of Amsterdam
2019 Co-lecturer *Astrophysics*, BSc students (year 2). U. of Amsterdam

Guest and substitute lectures

- 2009, 2017–2021 Guest lecturer *Compact Objects*, BSc students (year 3). U. of Amsterdam
2017 Guest lecturer *Open Problems*, MSc students. U. of Amsterdam
2012 Guest lecturer *High Energy Universe*, PhD students. U. of Michigan
2008, 2009 Guest lecturer *Orientation*, BSc students (year 3). U. of Amsterdam

Supervision of Master Research

- 2023 Astrovaria (6 ECTS), Mr. V. Puthusseril Anilkumar, U. of Amsterdam
2022–2023 MSc research project (60 ECTS), Ms. Eleonora Caruso, U. of Amsterdam
2022–2023 MSc research project (60 ECTS), Ms. Iris Reitsma, U. of Amsterdam
2022–2023 MSc research project (60 ECTS), Mr. Simon van Eeden, U. of Amsterdam
2022 Astrovaria (6 ECTS), Ms. E. Caruso, U. of Amsterdam
2021–2022 MSc research project (60 ECTS), Mr. K. Zafeiropoulos, U. of Amsterdam
2021–2022 MSc research project (60 ECTS), Mr. G. Zervas, U. of Amsterdam
2020–2021 Post-MSc research project (7 months), Mr. J. van Opijnen, U. of Amsterdam.
Funded by my Vidi research grant. Now doing missionaries work.
2020–2021 MSc research project (60 ECTS), Ms. L. van Haastere, U. of Amsterdam
Now PhD student in astronomy at Leiden University
2020 Astrovaria (6 ECTS), Ms. J. Kleverlaan, U. of Amsterdam
2020 Astrovaria (6 ECTS), Ms. S. Fijma, U. of Amsterdam
2020 Astrovaria (6 ECTS), Mr. J. Groot, U. of Amsterdam
2020 Astrovaria (6 ECTS), Ms. M. van Etten, U. of Amsterdam
2019–2021 Post-MSc research project, Mr. Osman Ahmed, Debre Tabor University, Ethiopia
2019–2020 MSc research project (60 ECTS), Mr. M. Stoop, U. of Amsterdam
Now PhD student in astronomy at the U. of Amsterdam
2018–2019 MSc research project (60 ECTS), Ms. M. Georganti, U. of Amsterdam
Now PhD student in astronomy at the U. of Southampton, UK
2018 ERASMUS+ research project (4 months), Ms. E. López, U. of Amsterdam
Now PhD student in astronomy at the U. of Valparaíso, Chile
2017 ERASMUS+ research project (3 months), Mr. A. Marino, U. of Amsterdam
Now PD fellow at the U. of Barcelona, Spain
2009–2010 MSc research project (60 ECTS), Dr. S. Broerse, U. of Amsterdam
PhD in astronomy, now Business Intelligence and Analytics Manager at Deloitte

Supervision of Undergraduate Research

- 2023 BSc research project (15 ECTS), Ms. R. Verpoort, U. of Amsterdam
2023 BSc research project (15 ECTS), Ms. A. van Wijck, U. of Amsterdam
2022 BSc research project (15 ECTS), Mr. D. de Rijk, U. of Amsterdam
2021–2022 Grad project Fontys Applied Physics (5 months), Ms. S. Schot, U. of Amsterdam
2021 BSc research project (15 ECTS), Mr. M. Petrus, U. of Amsterdam
2021 BSc research project (15 ECTS), Mr. S. van Eeden, U. of Amsterdam
2019 ASPIRE research project (2 months), Mr. Alexis Andres, U. of Amsterdam
2019 BSc research project (15 ECTS), Ms. S. Fijma, U. of Amsterdam
2019 BSc research project (15 ECTS), Ms. J. Kleverlaan, U. of Amsterdam
2019 BSc research project (15 ECTS), Ms. M. van Etten, U. of Amsterdam
2019 BSc research project (15 ECTS), Mr. J. Groot, U. of Amsterdam
2018 BSc research project (15 ECTS), Mr. B. Belhach, U. of Amsterdam
2018 BSc research project (15 ECTS), Mr. L. Kok, U. of Amsterdam
2018 BSc research project (15 ECTS), Mr. M. Rustenburg, U. of Amsterdam
2015 Summer research project (2 months), Ms. A.C. Waterhouse, U. of Cambridge
2009 BSc research project (15 ECTS), Mr. O. Gurney-Champion, U. of Amsterdam
2008 BSc research project (15 ECTS), Mr. S. Westerhout, U. of Amsterdam

Journal abbreviations used: ApJ = Astrophysical Journal, A&A = Astronomy & Astrophysics, MNRAS = Monthly Notices of the Royal Astronomical Society, A&G = Astronomy & Geophysics, ATel = Astronomer's Telegram, JApA = Journal of Astrophysics and Astronomy, SCPMA = Science China Physics, Mechanics & Astronomy.

Review Papers: First Author

- 2022 **Degenaar, N.**, Wijnands, R. & Maccarone, T.M., invited review for New Astronomy Reviews
Low-level accretion in low-mass X-ray binaries
- 2018 **Degenaar, N.** & Suleimanov, V., book chapter in “The physics and astrophysics of neutron stars”, Springer book collection on Astronomy and Astrophysics Library, arXiv:1806.02833
Testing the equation of state with electromagnetic observations
- Degenaar, N.**, Ballantyne, D.R., Belloni, T., Chakraborty M., Chen, Y.-P., Ji, L., Kretschmar P., Kuulkers, E., Li, J., Maccarone, T.J., Malzac J., Zhang, S., Zhang, S.-N., 2018, Space Science Reviews 214, 15
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- 2015 **Degenaar, N.**, Wijnands, R., Miller, J.M., Reynolds, M.T., Kennea, J.A., Gehrels, N., 2015, JHEAp 7, 137
The Swift X-ray monitoring campaign of the center of the Milky Way

Review Papers: Co-Author

- 2023 Neilsen, J. & **Degenaar, N.**, book chapter in High-resolution X-ray spectroscopy, Springer
Disk winds in Galactic X-ray binaries
- 2021 Bahramian, A. & **Degenaar, N.**, book chapter in Handbook of X-ray and Gamma-ray Astronomy, Springer
Phenomenology and populations of low-mass X-ray binaries
- 2017 Wijnands, R., **Degenaar, N.**, & Page, D., 2017, JApA 38, 49
Crust cooling of accretion-heated neutron stars
- Middleton, M., Casella, P., Gandhi, P., Bozzo, E., Anderson, G., **Degenaar, N.**, Donnarumma, I., Israel, G., Knigge, C., Lohfink, A., Markoff, S., Marsh, T., Rea, N., Tingay, S., Wiersema, K., Altamirano, D., Bhat-tacharya, D., Brandt, W., Carey, S., Charles, P., Diaz Trigo, M., Done, C., Kotze, M., Marsh, T., Eikenberry, S., Fender, R., Ferruit, P., Fuerst, F., Greiner, J., Ingram, A., Heil, L., Jonker, P., Komossa, S., Leibundgut, B., Maccarone, T., Malzac, J., McBride, V., Miller-Jones, J., Page, M., Maria Rossi, E., Russell, D., Shahbaz, T., Sivakoff, G., Tanaka, M., Thompson, D., Uemura, M., Uttley, P., van Moorsel, G., Van Doesburgh, M., Warner, B., Wilkes, B., Wilms, J., Woudt, P., 2017, New Astronomy Reviews 79, 28
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Refereed Journals: First Author

- 2021 **Degenaar, N.**, Page, D., Beznogov, M.V., van den Eijnden, J., Wijnands, R., Reynolds, M., MNRAS 508, 882
Constraining the properties of dense neutron star cores: The case of the X-ray binary HETE J1900.1–2455
- 2019 **Degenaar, N.**, Ootes, L.S., Page, D., Wijnands, R., Parikh, A., Homan, J., Cackett, E.M., Miller, J.M., Altami-rano, D., Linares, M., 2019, MNRAS 488, 4477
Crust cooling of the neutron star in Aql X-1: Different depth and magnitude of shallow heating during similar accretion outbursts
- 2017 **Degenaar, N.**, Ootes, L.S., Reynolds, M.T., Wijnands, R., Page, D., 2017, MNRAS Letters 465, L10
A very cold neutron star crust in the transiently accreting millisecond X-ray pulsar HETE J1900.1–2455 after 10 years of active accretion
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NuSTAR detection of disk reflection from close to the neutron star in 4U 1608–52
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Continued neutron star crust cooling of the 11 Hz X-ray pulsar in Terzan 5
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The X-ray flaring properties of Sgr A during six years of monitoring with Swift*
- Degenaar, N.**, Miller, J. M., Wijnands, R., Altamirano, D., Fabian, A. C., 2013, ApJ Letters 767, L37
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Swift follow-up observations of unclassified ASCA sources
- Degenaar, N.**, Wijnands, R., 2012, MNRAS 422, 581
Strong X-ray variability during the quiescent state of the neutron star low-mass X-ray binary EXO 1745–248

- 2011 **Degenaar, N.**, Brown, E. F., Wijnands, R., 2011, MNRAS Letters 418, L152
Evidence for crust cooling in the transiently accreting 11-Hz X-ray pulsar in the globular cluster Terzan 5
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Swift detection of an intermediately long X-ray burst from the very faint X-ray binary XMMU J174716.1–281048
- Degenaar, N.**, & Wijnands, R., 2011, MNRAS Letters 414, L50
The accretion-heated crust of the transiently accreting 11-Hz X-ray pulsar in the globular cluster Terzan 5
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The soft quiescent spectrum of the 11 Hz pulsar in Terzan 5
- Degenaar, N.**, Wolff, M. T., Ray, P. S., Wood, K. S., Homan, J., Lewin, W. H. G., Jonker, P. G., Cackett, E. M., Miller, J. M., Brown, E. F., Wijnands, R., 2011, MNRAS 412, 1409
Further X-ray observations of EXO 0748–676 in quiescence: evidence for a cooling neutron star
- 2010 **Degenaar, N.**, & Wijnands, R., 2010, A&A 524, 69
A four-year baseline Swift study of enigmatic X-ray transients located near the Galactic center
- Degenaar, N.**, Jonker, P.G., Kaur, R., Rea, N., Israel, G. L., Patruno, A., Trap, G., Cackett, E.M., D’Avanzo, P., Lo Curto, G., Torres, M. A. P., Novara, G., Krimm, H., Holland, S.T., De Luca, A., Esposito, P., Wijnands, R., 2010, MNRAS 404, 1591
Multi-wavelength observations of 1RXH J173523.7–354013: revealing an unusual bursting neutron star
- 2009 **Degenaar, N.**, Wijnands, R., Wolff, M. T., Ray, P. S., Wood, K. S., Homan, J., Lewin, W. H. G., Jonker, P. G., Cackett, E. M., Miller, J. M., Brown, E. F., 2009, MNRAS Letters 396, L26
Chandra and Swift observations of the quasi-persistent neutron star transient EXO 0748–676 back to quiescence
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- Fijma, S., van den Eijnden, J., **Degenaar, N.**, Russell, T.D., Miller-Jones, J.C.A., 2023, to appear in MNRAS, arXiv2204.10910
Evaluating the jet/accretion coupling of Aql X-1: probing the contribution of accretion flow spectral components
- Alizai, K., Chenevez, J., Cumming, A., **Degenaar, N.**, Falanga, M., Galloway, D.K., in’t Zand, J.J.M., Jaisawal, G.K., Keek, L., Kuulkers, E., Lampe, N., Schatz, H., Serino, M 2023, to appear in MNRAS
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- van den Eijnden, J., **Degenaar, N.**, Russell, T.D., Miller-Jones, J.C.A., Rouco Escorial, A., Wijnands, R., Sivakoff, G.R., Hernández Santisteban, J.V., 2023, MNRAS 516, 4844
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On the recurrence times of neutron star X-ray binary transients and the nature of the Galactic Centre quiescent X-ray binaries
- Armas Padilla, M., Rodríguez-Gil, P., Muñoz-Darias, T., Torres, M.A.P., Casares, J. **Degenaar, N.**, Dhillon, V.S., Heinke, C.O., Littlefair, S.P.; Marsh, T.R., 2022, ApJ Letters 931, L9
A Tentative 114 minute Orbital Period Challenges the Ultracompact Nature of the X-Ray Binary 4U 1812–12
- Akiyama, K. et al. (337 authors), 2022, ApJ Letters 930, L13
First Sagittarius A Event Horizon Telescope Results. II. EHT and Multiwavelength Observations, Data Processing, and Calibration*

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First Sagittarius A Event Horizon Telescope Results. I. The Shadow of the Supermassive Black Hole in the Center of the Milky Way*
- Scaringi, S., Groot, P.J., Knigge, C., Bird, A.J., Breedt, E., Buckley, D.A.H., Cavecchi, Y., **Degenaar, N.**, de Martino, D., Done, C., Fratta, M., Ilkiewicz, K., Koerding, E., Lasota, J.-P., Littlefield, C., Manara, C. F., O'Brien, M., Szkody, P., Timmes, F. X., 2022, Nature 604, 447
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- Castro Segura, N., Knigge, C., Long, K.S., Altamirano, D., Armas Padilla, M., Bailyn, C., Buckley, D.A.H., Buisson, D.J.K., Casares, J., Charles, P., Combi, J.A., Cúneo, V. A., **Degenaar, N.**, del Palacio, S., Díaz Trigo, M., Fender, R., Gandhi, P., Georganti, M., Gutiérrez, C., Hernández Santisteban, J.V., Jiménez-Ibarra, F., Matthews, J., Méndez, M., Middleton, M., Muñoz-Darias, T., Özbey Arabac, M., Pahari, M., Rhodes, L., Russell, T.D., Scaringi, S., van den Eijnden, J., Vasilopoulos, G., Vincentelli, F.M., Wiseman, P., 2022, Nature 603, 52
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- Page, D., Homan, J., Nava-Callejas, M., Cavecchi, Y., Beznogov, M.V., **Degenaar, N.**, Wijnands, R., Parikh, A.S., 2022, ApJ 933, 216
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- 2021 Russell, T.D., **Degenaar, N.**, van den Eijnden, J., Del Santo, M., Segreto, A., Altamirano, D., Beri, A., Díaz Trigo, M., Miller-Jones, J.C.A., 2021, MNRAS Letters 508, L6
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- Stoop, M., van den Eijnden, J., **Degenaar, N.**, Bahramian, A., Swihart, S.J., Strader, J., Jiménez-Ibarra, F., Muñoz-Darias, T., Armas Padilla, M., Shaw, A.W., Maccarone, T.J., Wijnands, R., Russell, T.D., Hernández Santisteban, J.V., Miller-Jones, J.C.A., Russell, D.M., Maitra, D., Heinke, C.O., Sivakoff, G.R., Lewis, F., Bramich, D.M., 2021, MNRAS 507, 330
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- Buisson, D.J.K., Altamirano, D., Armas Padilla, M., Arzoumanian, Z., Bult, P., Castro Segura, N., Charles, P., **Degenaar, N.**, Díaz Trigo, M., van den Eijnden, J., Fogantini, F., Gandhi P., Gendreau, K., Hare, J., Homan, J., Knigge, C., Malacaria, C., Méndez, M., Muñoz Darias, T., Ng, M. Özbey Arabac?, M., Remillard, R., Strohmayer, T. E., Tombesi, F., Tomsick, J. A., Vincentelli, F., Walton, D. J., 2021, MNRAS 503, 5600
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