

Curriculum Vitae

Marten Henric van Kerkwijk

Department of Astronomy and Astrophysics
University of Toronto
60 Saint George Street
Toronto, ON, Canada M5S 3H8

tel.: +1(416)946-7288
fax.: +1(416)946-7287
e-mail: mhvk@astro.utoronto.ca
www: <http://www.astro.utoronto.ca/~mhvk>

A: Biographical Information

Personal

Born 8 April 1966 in Haarlem, The Netherlands.
Canadian & Dutch citizenship, married.

Education

1983–1988: Undergraduate, University of Amsterdam; ‘doctoraal’ (equivalent to MA, ‘cum laude’), October 1988, on the basis of a thesis titled “Massive X-ray binaries, Observations of One and Theory on All,” supervised by E. P. J. van den Heuvel (list of publications 1 and 2).

1988–1993: ‘Assistent in Opleiding’ (PhD student), University of Amsterdam; PhD, November 1993, on the basis of a thesis titled “The mass of Vela X-1, the nature of Cygnus X-3, the character of Be stars,” supervised by J. van Paradijs (list of publications 5, 10, 11, 16, 18, 19, and 24).

Employment

Present

University of Toronto. Appointed as Full Professor to the Department of Astronomy and Astrophysics and School of Graduate Studies January 2003.

History

1988–1993: ‘Assistent in Opleiding’ (PhD student), University of Amsterdam.

1993–1997: Research Fellow, California Institute of Technology.

1997–1998: Postdoctoral Research Associate, University of Cambridge, Institute of Astronomy.

1998–2001: ‘Docent/Onderzoeker’ (tenured assistant professor), Utrecht University.

2001–2002: ‘Senior Docent/Onderzoeker’ (associate professor), Utrecht University.

2003– : Professor, University of Toronto.

Visiting appointments

1991/06–07: Visiting student member, Inst. for Theoretical Physics (for “Neutron stars in binary systems”).

2000/10–12: Visiting member, Inst. for Theoretical Physics (for “Spin and magnetism in young neutron stars”).

2007/04–05: Short-term visitor, School of Natural Sciences, Inst. of Advanced Studies.

2009/10–2010/01: Visiting member, Kavli Institute for Astronomy & Astrophysics, Peking University.

2010/02–07: Moore Distinguished Scholar, California Institute of Technology.

Honours

1993–1996: Hubble Fellow; Space Telescope Science Institute.

1998–2002: ‘Akademieonderzoeker’; Royal Netherlands Academy of Arts and Sciences (KNAW).

2010 : Moore Distinguished Scholar; California Institute of Technology.

Affiliations and activities

1990– : ‘Nederlandse Astronomen Club’ (NAC; Dutch astronomer’s association)

2000– : International Astronomical Union (IAU)

2003– : Canadian Astronomical Society (CASCA)

B: Academic history

Research endeavours

I am interested generally in compact objects, stars and binaries, their structure, formation and evolution, and their use to infer fundamental physical properties. My research is based on observations, but includes interpretation, theory and numerical modelling as required. I generally try to make progress using key observations and/or physical considerations of individual, carefully selected objects. My focus over the last few years has been to try to use neutron stars to study high-density and high field-strength physics, in conditions out of reach of terrestrial experiment (and theory, as yet), and to solve associated astronomical puzzles. I have also started in two new directions, in which I try to understand what white-dwarf binaries lead to type Ia supernova explosions, and search for new types of transients. I describe these three themes in turn.

Neutron stars

The identification of bright, soft X-ray sources with nearby neutron stars emitting thermal spectra offers the prospect of measuring the radii and perhaps masses of single neutron stars, and hence we are studying these objects at all wavelengths. My primary goal is to understand the processes occurring in the extremely high pressure atmospheres, often in ultra-strong magnetic fields, to infer bulk neutron-star properties, and to constrain the equation of state of matter in neutron-star interiors, and thus the behaviour of matter at densities well above nuclear.

A secondary goal is to understand the overall neutron star population. In particular, I am trying to tie the various groups together, finding, e.g., evidence that the nearby neutron stars are descendants of even more strongly magnetised objects, or ‘magnetars,’ such as the soft gamma-ray repeaters and anomalous X-ray pulsars. The latter have magnetic field strengths of about 10^{15} G, and promise to be a probe of the exotic physical processes occurring in fields well above the QED field (4×10^{13} G, for which the Landau level has energy equal to the electron rest mass).

Apart from these projects, I am pursuing several other approaches. One example is ultra-high precision measurements on neutron-star binaries, using radio timing, radial-velocity studies, and hopefully astrometry.

Exploding white dwarfs

Type Ia supernova explosions are associated with the nuclear disintegration of white dwarfs. It is not clear, however, what their progenitors are. Generally, it is thought that the explosions happen as white dwarfs are brought to approach their maximum possible mass, either by slow accretion from a normal star, or by a merger with another white dwarf. However, all known channels produce too few explosions. I am pursuing two possible resolutions. One is to look for systems in states that could hitherto not been observed, in which the accretion is so rapid that a dense wind ensues, and the other is to see whether it is possible that explosions happen even for mergers of white dwarfs with total mass below the maximum mass.

New types of transients

Historically, variable stars and transients advanced the field of astronomy. RR Lyrae and Cepheids, and novae and supernovae gave the first real measure of the Galaxy and the Universe. All of these, like the more recent gamma-ray bursts, also gave wonderful new physical insights. I am involved in the development of a wide-field camera for the Canadian Arctic (led by Prof. Carlberg), with which we hope to find new types of transients. Separately, I have been reviewing possible ways to make transients, systematically considering what could happen in the various types of exotic binaries expected from considerations of binary evolution.

Research grants

- 2003: Univ. of Toronto (Connaught, Department, Fac. of Arts and Sciences), startup, 1 yr, CA\$85,000.
 2003: Natural Sciences and Engineering Research Council (NSERC), Discovery grant, 5 yr, CA\$350,000.
 2008: Natural Sciences and Engineering Research Council (NSERC), Discovery grant, 5 yr, CA\$343,580.

C: Scholarly and professional work**Journals***

1. Van Kerkwijk, M.H., van Oijen, J.G.J., van den Heuvel, E.P.J., 1989, "Extended optical spectroscopy of the massive companion of 4U1907+09," *A&A* 209, 173–182
2. Waters, L.B.F.M., van Kerkwijk, M.H., 1989, "The relation between orbital and spin periods in massive X-ray binaries," *A&A* 223, 196–206
3. Baade, D., Schmutz, W., van Kerkwijk, M.H., 1990, "Short-term activity in the γ^2 Velorum system: the O-type supergiant is a nonradially pulsating star," *A&A* 240, 105–115
4. Wijers, R.A.M.J., van den Heuvel, E.P.J., van Kerkwijk, M.H., Bhattacharya, D., 1992, "Genesis of a pulsar's planets," *Nature* 355, 593
5. Van Kerkwijk, M.H., Charles, P.A., Geballe, T.R., King, D.L., Miley, G.K., Molnar, L.A., van den Heuvel, E.P.J., van der Klis, M., van Paradijs, J., 1992, "Infrared helium emission lines from Cygnus X-3 suggesting a Wolf-Rayet star companion," *Nature* 355, 703–705
6. Meurs, E.J.A., Pijpers, A.J.M., Pols, O.R., Waters, L.B.F.M., Coté, J., van Kerkwijk, M.H., van Paradijs, J., Burki, G., Taylor, A.R., de Martino, D., 1992, "ROSAT survey observations of OB and OBe stars," *A&A* 265, L41–L44
7. Augusteijn, T., van Kerkwijk, M.H., van Paradijs, J., 1992, "A 59^m photometric period in the dwarf nova V485 Centauri," *A&A* 267, L55–L58
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9. Dougherty, S.M., Cramer, N., van Kerkwijk, M.H., Taylor, A.R., Waters, L.B.F.M., 1993, "Intrinsic IR colours of normal B-type stars using the Geneva visual and ESO IR photometric systems," *A&A* 273, 503–508
10. Coté, J., van Kerkwijk, M.H., 1993, "New Be stars and the Be star frequency," *A&A* 274, 870–876
11. Van Kerkwijk, M.H., 1993, "Spectroscopic and photometric variability of Cygnus X-3," *A&A* 276, L9–L12
12. Dougherty, S.M., Waters, L.B.F.M., Burki, G., Coté, J., Cramer, N., van Kerkwijk, M.H., Taylor, A.R., 1994, "Near-IR excess of Be stars," *A&A* 290, 609–622
13. Kulkarni, S.R., Matthews, K.Y., Neugebauer, G., Reid, I.N., van Kerkwijk, M.H., Vasisht, G., 1995, "Optical and infrared observations of SGR 1806–20," *ApJ* 440, L61–L64
14. Van Kerkwijk, M.H., Kulkarni, S.R., Matthews, K.Y., Neugebauer, G., 1995, "A luminous companion to SGR 1806–20," *ApJ* 444, L33–L35
15. Johnston, S., Walker, M.A., van Kerkwijk, M.H., Lyne, A.G., D'Amico, N., 1995, "A 1500 MHz survey of the Galactic centre for pulsars," *MNRAS* 274, L43–L45
16. Van Kerkwijk, M.H., Waters, L.B.F.M., Marlborough, J.M., 1995, "H α emission and infrared excess in Be stars: probing the circumstellar disc," *A&A* 300, 259–268
17. Van Kerkwijk, M.H., Kulkarni, S.R., 1995, "Spectroscopy of the white-dwarf companions of PSR 0655+64 and 0820+02," *ApJ* 454, L141–L144
18. Van Kerkwijk, M.H., van Paradijs, J., Zuiderwijk, E.J., Hammerschlag-Hensberge, G., Kaper, L., Sterken, C.S., 1995, "Spectroscopy of HD 77581 and the mass of Vela X-1," *A&A* 303, 483–496

* Publishers of the journals are:

A&A (Astronomy and Astrophysics): Springer Verlag, Heidelberg (before 2001); EDP Sciences, Les Ulis (after 2001);
AJ (Astronomical Journal): Univ. of Chicago Press, Chicago (before 2008); Institute of Physics Publishing, Bristol (after 2008);
ApJ (Astrophysical Journal): Univ. of Chicago Press, Chicago (before 2009); Institute of Physics Publishing, Bristol (after 2009);
MNRAS (Monthly Notices of the Royal Astronomical Society): Blackwell Science, Oxford;
Nature: McMillan Magazines, London

19. Van Kerkwijk, M.H., van Paradijs, J., Zuiderwijk, E.J., 1995, "On the masses of neutron stars," *A&A* 303, 497–501
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26. Augusteijn, T., van der Hooft, F., de Jong, J.A., van Kerkwijk, M.H., van Paradijs, J., 1998, "Phase-resolved spectroscopy of the low-mass X-ray binaries 1636–536/V 801 Ara and 1735–444/V 926 Sco," *A&A* 332, 561–568
27. Chakrabarty, D., van Kerkwijk, M.H., Larkin, J.E., 1998, "Infrared spectroscopy of GX 1+4/V2116 Oph: evidence for a fast red giant wind?," *ApJ* 497, L39–L42
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31. Stappers, B.W., van Kerkwijk, M.H., Lane, B.F., Kulkarni, S.R., 1998, "The light curve of the companion to PSR J2051–0827," *ApJ* 510, L45–L48
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35. Van Kerkwijk, M.H., Bell, J.F., Kaspi, V.M., Kulkarni, S.R., 2000, "The temperature and cooling age of the white-dwarf companion to the millisecond pulsar PSR B1855+09," *ApJ* 530, L37–L40
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40. Hulleman, F., van Kerkwijk, M.H., Kulkarni, S.R., 2000, "An optical counterpart to the anomalous X-ray pulsar 4U 0142+61," *Nature* 408, 689–692
41. Stappers, B.W., Van Kerkwijk, M.H., Bell, J.F., Kulkarni, S.R., 2001, "Intrinsic and reprocessed optical emission from the companion to PSR J2051–0827," *ApJ* 548, L183–L186
42. Kaplan, D.L., Kulkarni, S.R., van Kerkwijk, M.H., Rothschild, R.E., Lingenfelter, R.L., Marsden, D., Danner, R., Murakami, T., 2001, "HST observations of SGR 0526–66: new constraints on accretion and magnetar models," *ApJ* 556, 399–407

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45. Van Kerkwijk, M.H., Kulkarni, S.R., 2001, "Optical spectroscopy and photometry of the neutron star RX J1856.5–3754," *A&A* 378, 986–995
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48. Van Kerkwijk, M.H., Kulkarni, S.R., 2001, "An unusual H α nebula around the nearby neutron star RX J1856.5–3754," *A&A* 380, 221–237
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92. Damjanov, I., Jayawardhana, R., Scholz, A., Ahmic, M., Nguyen, D.C., Brandeker, A., van Kerkwijk, M.H., 2007, “A comprehensive view of circumstellar disks in Chameleon I: infrared excess, accretion signatures, and binarity,” *ApJ* 670, 1337–1346

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94. Van Kerkwijk, M.H., Kaplan, D.L., 2008, "Timing the Nearby Isolated Neutron Star RX J1856.5–3754," *ApJ* 673, L163–L166
95. Durant, M., van Kerkwijk, M.H., 2008, "A search for the optical counterpart to the magnetar CXOU J010043.1–721134," *ApJ* 680, 1394–1397
96. Van Kerkwijk, M.H., Ingle, A., 2008, "Reconstructing the Guitar: blowing bubbles with a pulsar bow shock back flow," *ApJ* 683, L159–L162
97. Lafrenière, D., Jayawardhana, R., Brandeker, A., Ahmic, M., van Kerkwijk, M.H., 2008, "A multiplicity census of young stars in Chamaeleon I," *ApJ* 683, 844–861
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100. Lafrenière, D., Jayawardhana, R., van Kerkwijk, M.H., 2008, "Direct imaging and spectroscopy of a planetary mass candidate companion to a young solar analog," *ApJ* 689, L153–L156
101. Kaplan, D.L., van Kerkwijk, M.H., 2009, "Constraining the spin-down of the nearby isolated neutron star RX J2143.0+0654," *ApJ* 682, L62–L66
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103. Nguyen, D.C., Jayawardhana, R., van Kerkwijk, M.H., Brandeker, A., Scholz, A., Damjanov, I., 2009, "Disk-braking in young stars: probing rotation in Chamaeleon I and Taurus-Auriga," *ApJ* 695, 1648–1656
104. Kaplan, D.L., van Kerkwijk, M.H., 2009, "Constraining the spin-down of the nearby isolated neutron star RX J0806.4–4123, and implications for the population of nearby neutron stars," *ApJ* 705, 798–808
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106. Van Kerkwijk, M.H., Rappaport, S.A., Breton, R.P., Justham, S., Podsiadlowski, P., Han, Z., 2010, "Observations of Doppler boosting in Kepler light curves," *ApJ* 715, 51–58
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108. Kulkarni, S.R., van Kerkwijk, M.H., 2010, "The (Double) White Dwarf Binary SDSS 1257+5428," *ApJ* 719, 1123–1131
109. Bhalerao, V.B., van Kerkwijk, M.H., Harrison, F.A., Kasliwal, M.M., Kulkarni, S.R., Rana, V.R., 2010, "The polar Catalysmic Variable 1RXS J173006.4+033813," *ApJ* 721, 412–423
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116. Nguyen, D.C., Brandeker, A., van Kerkwijk, M.H., Jayawardhana, R., 2011, "Close companions to young stars. I. A large spectroscopic survey in Chamaeleon I and Taurus-Auriga," *ApJ* 745:119 (25pp)
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- 122[†] Van Kerkwijk, M.H., 1996, “The white dwarf companions of recycled pulsars.” In: Johnston, S., Walker, M., Bailes, M. (eds.) *Proc. IAU Coll. 160, “Pulsars: problems and progress.”* ASP Conf. Series 105, 489–496 (astro-ph/9606051)
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- 124[‡] Van Kerkwijk, M.H., 2001, “Neutron star mass determinations.” In: Kaper, L., Van den Heuvel, E.P.J., Woudt, P.A. (eds.) *Proc. of the ESO Workshop “Black holes in binaries and galactic nuclei.”* Springer, Heidelberg, p. 39–44 (astro-ph/0001077)
- 125[‡] Van Kerkwijk, M.H., 2003, “Constraints on the equation of state of ultra-dense matter from observations of neutron stars.” In: Van den Heuvel, E.P.J., Kaper, L., Rol, E., Wijers, R.A.M.J. (eds), *Proc. of “From X-ray Binaries to Gamma-ray Bursts,”* a Symposium held in memory of Jan van Paradijs, ASP Conf. Series 308, 191–200 (astro-ph/0110336)
126. Van Kerkwijk, M.H., 2003, “X-ray spectroscopy of thermally emitting neutron stars.” In: Camilo, F., Gaensler, B.M. (eds), *Proc. IAU Symp. 218, “Young neutron stars and their environments.”* Astronomical Society of the Pacific, Provo, p. 283–286 (astro-ph/0310389)
- 127[†] Van Kerkwijk, M.H., 2004, “Properties of neutron stars.” In: Hong, D.K., Lee, C.-H., Lee, H.K., Min, D.-P., Park, T.-S., & Rho, M. (eds), *Proc. KIAS-APCTP International Symposium in Astro-Hadron Physics “Compact Stars: the Quest for New States of Dense Matter,”* World Scientific, Singapore, 116–127 (astro-ph/0403489)
- 128[†] Van Kerkwijk, M.H., Bassa, C.G., Jacoby, B.A., Jonker, P.G., 2005, “Optical studies of companions to millisecond pulsars.” In: Rasio, F.A., Stairs, I.H. (eds), *Proc. of the Aspen Winter Conference on “Binary radio pulsars.”* ASP Conf. Series 328, 357–369 (astro-ph/0405283)
- 129[‡] Van Kerkwijk, M.H., Kaplan, D.L., 2007, “Isolated neutron stars: Magnetic fields, distances, and spectra.” In: Zane, S., Turolla, R., Page, D. (eds), *Proc. of “Isolated Neutron Stars: from the Interior to the Surface.”* *Astrophys. & Space Sci.* 308, 191–201 (astro-ph/0607320)

Popular/other

130. Van Kerkwijk, M.H., 1980, “Variabelere logische poort,” *Elektuur*, 80/6, 46–48 (translated into English (“variable logic gate,” *Elektor*, 80/6, 30–31), French (*Elektor*, 80/9, 53–54) and German (*Elektor*, 80/3, 62–63); *Elektuur BV*, Beek, The Netherlands)
131. Van Kerkwijk, M.H., 1992, “Cygnus X-3: een ‘missing link’ in de evolutie van dubbelsterren?,” *NWO Nieuwsbrief*, 92/4, 10 (newsletter of the Netherlands Organisation for Scientific Research)

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[†] Invited review [‡] Invited talk

132. Van Kerkwijk, M.H., 1992, “Cygnus X-3: een ontbrekende schakel in het leven van een dubbelster?,” *Nederlands Tijdschrift voor Natuurkunde*, 58/16, 257–260 (journal of the Dutch physical society, Badhoevedorp, The Netherlands)
133. Kulkarni, S.R., van Kerkwijk, M.H., 1996, “X-ray bursts puzzle theorists,” *Physics World*, 9/5, 19–20 (Institute of Physics Publishing Ltd, Bristol, UK)
134. Van Kerkwijk, M.H., Kulkarni, S.R., 2000, “The mystery of the lonely neutron star – the VLT reveals bowshock nebula around RX J1856.5-3754,” ESO press release 19/00
135. Van Kerkwijk, M.H., 2001, “Een hete, eenzame neutronenster op leeftijd,” *Zenit*, 2001/1, 12–14 (main Dutch astronomy magazine, De Koepel, Utrecht)
136. Van Kerkwijk, M.H., 2005, “From white dwarfs to black holes: density scales of stars,” *IDEA&S* 2/2, 37 (Arts & Science review, University of Toronto)
137. Kaper, L., van der Meer, A., van Kerkwijk, M.H., van den Heuvel, E.P.J., 2006, “Weighing the masses of neutron stars,” *ESO Messenger* 126, 27–30

Invited lectures and reviews

Colloquia: 47 since Jan. 2000. Of these, 42 aimed at astronomers (CITA, Groningen, Saclay, UoT [thrice], TAPIR/Caltech, ITP, UCSC, Berkeley, Stanford, UCSB, Columbia [thrice], Leiden [twice], USTC [Hefei, China], Cornell [twice], McGill, Amsterdam [twice], Caltech [twice], Lund, UCLA, PUC [Santiago, Chile; twice], Melbourne, Penn State, MIT [twice], UNC, ESO/Chile, IAS, Waterloo, KIAA [Beijing], NAOC [Beijing], Alberta, Jena, Bonn) one at nuclear physicists (KVI/Groningen), and four at a broad physics audience (UCSB, McGill, Tsinghua, UWM).

Invited reviews: Five since Jan. 2000; on properties of neutron stars (Van Paradijs memorial symp., Amsterdam, 2000; KIAS-APCTP Int’l Symp. in Astro-Hadron Physics, Seoul, 2003), on anomalous X-ray pulsars (HEAD meeting, Honolulu, 2000), on pulsar, white-dwarf binaries (Aspen winter conference on astrophysics, Aspen, 2004), and on thermal emission from neutron stars (Compact Stars in the Rockies, Banff, 2008).

D: Teaching

Courses taught

AST221H1F: Undergraduate class “Stars and the solar system” (2006, 2007, 2008, using the design of Prof. Wu).

AST320H1S: Senior undergraduate class “Introduction to astrophysics” (2003, 2005–2007, 2009; complete redesign).

AST424H1: Senior undergraduate class “Introduction to Astronomical Research” (2011, new course).

AST425Y1: Supervision of “Research topics in Astronomy & Astrophysics” (2010–2011, using the design of Prof. Rucinski).

AST101H1F: Introductory class for non-science majors “The Sun and its neighbours” (2003–2005, 2011; designed from scratch for Convocation Hall; team-taught with Profs Abraham and Netterfield in 2003 and 2004; with Prof. Jayawardhana in 2005; and with Prof. Reid in 2011).

AST201H1S: Introductory class for non-science majors “Stars and galaxies” (2004–2006, 2009; designed from scratch for Convocation Hall; team-taught with Profs Abraham and Netterfield in 2003 and 2004; with Prof. Jayawardhana in 2006; and with Prof. Mochnacki in 2009).

AST210H1F: Introductory class for science majors “Great Moments in Astronomy” (2010, complete redesign).

SCI199Y2: First-year undergraduate seminar class “Astronomy at the frontier” (2007, taught together with Prof. Wu).

AST3010S: Graduate course “Advanced topics in stellar astronomy: Transients” (2011, new course).

Mini-course on “Star and planet formation” (2005; designed from scratch; team-taught with seven others [organiser]).

Mini-course on “Statistics in astronomy” (2007; designed from scratch; taught together with Prof. Netterfield).

Before Jan. 2003 (at Utrecht University): senior undergraduate class “Structure and evolution of stars” (2000, 2001; complete redesign); part of an inter-university course on “Star and planet formation” (2002; designed from scratch).

Received formal teaching qualification from Utrecht University in 2001.

Undergraduates (including summer students and research assistants)

- 2003–2004: C. D’Angelo, “The formation of contact binaries in hierarchical triple systems.”⁷⁹ (AST425 research project, 2004 Summer student, research assistant)
- 2007–2009: S. Ossokine, “Guitar fever and a pulsar’s speed” (research assistant, NSERC Summer student, AST425 research project).
- 2007–2008: A. Ingle, “Reconstructing the Guitar: blowing bubbles with a pulsar bow shock back flow”⁹⁶ (summer research assistant and AST 425 research project).
- 2010–2011: H. A. White, “Simmering and detonations in white dwarfs” (AST425 research project and Summer research assistant).
- 2011–2012: S. Byun, “White dwarf mergers” (AST425 research project).
- 2011–2012: M. Lennox, “Stable Nickel as a Discriminant between SN Ia models” (AST424 literature research).

MSc Students and short PhD research projects

- 2001–2002: C.G. Bassa (Utrecht), “Temperature and cooling age of the white dwarf companion of PSR J0218+4232.”⁶⁰
- 2001–2004: T. Janssen (Utrecht), “Observations of the companion to the pulsar PSR B1718–19: the role of tidal circularisation.”⁷⁴
- 2003–2004: F. G. Peña, “The properties of the eclipsing millisecond pulsar PSR J1740–5340 and its red straggler companion.” (AST1501 research project)
- 2004: M. Stankovic, “The formation of close binaries in triple systems.” (AST1501 research project)
- 2005: D. Nguyen, “Measuring the dark matter halo around the elliptical galaxy NGC 4636” (AST1500 research project, supervised jointly with Profs R. G. Abraham and S. Mochnacki).
- 2005–2006: D. Goncalves, “Testing white-dwarf models using the white-dwarf companion of the binary pulsar PSR J1909–3744” (AST1501 research project).
- 2005–2006: E. Mentuch, “Lithium depletion of young stellar associations”⁹⁹ (NSERC Summer and AST1501 research project, supervised jointly with Prof. R. Jayawardhana).
- 2007–2008: A. Rivera, “Dust scattering haloes around Anomalous X-ray Pulsars”¹⁰⁵ (AST1501 research project).
- 2008: J. Radigan, “The mass of the recurrent nova U Scorpii” (AST1500 research project).
- 2008–2009: K. Lepo, “A search for neutron stars companions to bright stars in the Rosat All-Sky Survey” (AST1501 research project).
- 2010–2011: C. C. Zhu, “White dwarf mergers” (AST1501 research project).
- 2011–2012: E. Blais, “Properties of white dwarf binaries” (AST1501 research project).

PhD students

- 1998–2002: R. Kotak (Lund), “Inside pulsating white dwarfs: Clues from time-resolved spectroscopy.”^{53, 54, 57, 65}
- 1998–2003: F. Hulleman (Utrecht), “Anomalous X-ray pulsars at visible and infrared wavelengths.”^{38, 40, 47, 66}
- 2002–2006: M. Durant, “Magnetars: distances, variability and multi-wavelength observations.”^{70, 73, 81, 83, 84, 85}
- 2002–2006: C. G. Bassa (Utrecht), “Optical studies of compact binaries in globular clusters and the galactic disk.”^{63, 78, 80} (co-promotor; Prof. F. Verbunt of Utrecht Univ. was primary supervisor).
- 2005–2009: D. Nguyen, “Probing Star Formation with High-Resolution Spectroscopy.”^{102, 103, 116} (co-supervised with Prof. Jayawardhana).
- 2009– : K. Lepo, Progenitors of Type Ia Supernovae.
- 2011– : C. C. Zhu, White Dwarf Mergers.

Postdoctoral fellows

- 1999–2002: J.A. Orosz (Utrecht), binary stars with compact objects.⁵⁶

Curriculum Vitae

2004–2007: A. Brandeker, multiplicity among young stars.^{82, 92, 93, 99, 97, 102, 103, 116}

2006–2007: K. Mori, isolated neutron stars.⁸⁶

2007–2009: D. Lafrenière, multiplicity among young stars.^{97, 100, 107}

2008–2011: R. Breton, masses of neutron stars.^{106, 112, 117}

Research assistants/associates

2003: F. Bao (Toronto), tertiary components to close binaries.

E: Administration

University

1998–2002: Organiser, Astronomy Colloquium (Utrecht).

1999–2000: Member, physics & astronomy education committee (Utrecht).

2001: Member, committee for implementation of the Bachelor/Master structure (Utrecht).

2002–2003: Member, search committee new departmental faculty.

2002– : Member, computing committee.

2003–2006: Organiser, Astronomy Colloquium.

2003– : Member, undergraduate curriculum committee.

2003: Chair, future of the library committee.

2003–2004: Adviser, title selection for library acquisition.

2003–2004: Member, search committee new departmental faculty.

2004: Member, Helen Sawyer Hogg visitor committee.

2005: Member, search committee new departmental chair.

2005–2007: Member, awards committee.

2006–2008: Chair, one of two first-year PhD students committees.

2007–2008: Member, Helen Sawyer Hogg visitor committee.

2008: Member, one of two first-year PhD students committees.

2008–2009: Co-organiser, Astronomy Colloquium.

2010: Member, one of two first-year PhD students committees.

2010–2011: Member, search committee new departmental/Dunlap Institute faculty.

2002– : Undergraduate chair.

2011: Member, search committee IT assistant.

2011: Member, search committee graduate chair assistant.

2012: Member, search committee IT assistant.

Qualifying exams: 2002: P. Nair (2002); B. Lee (2003); M.L. McClure (2003); M. Durant (2003); J. Liska (2004); I.-H. Li (2004); H. Neilson (2005); D. N. Nguyen (2006); R. Fernandez (2006); S. Gonzales (2007); B. Croll (2008); L. Fissel (2008); G. Rivest (2008); K. Lepo (2010); N. Tacik (2011).

Thesis exams: R. H. M. Voors (1999, Utrecht); J. Vink (1999, Utrecht); J. I. van Gent (2000, Utrecht); P. Veen (2000, Leiden); M. van den Berg (2001, Utrecht); E. van den Swaluw (2001, Utrecht); W. A. Barkhouse (2003); S. E. Thompson (2004, UNC); C. Tycner (2004); H. Trac (2004); A. van der Meer (2006, Amsterdam); M. Durant (2006); C. G. Bassa (2006, Utrecht); B. Lee (2007); D. S. Davis (2008; external examiner); R. Fernandez (2009); H. Neilson (2009); B. Croll (2011); S. González (2011).

Thesis committees: D. L. Kaplan (external adviser; 1998–2004, Caltech); S. E. Thompson (thesis committee and external adviser; 2002–2004); C. Bassa (external adviser & co-promotor; 2003–2006, Utrecht); B. Lee (2003–2007);

Curriculum Vitae

A. van der Meer (2003–2006, Amsterdam); H. Neilson (from 2004); R. Fernandez (2005–2009); M. Ahmic (2007); B. Croll (2007–2011); L. Fissel (from 2008); N. Tacik (from 2011).

Wider community

Continuing: Regular referee for ApJ, AJ, A&A, MNRAS, Nature, Science.

1996: Member, time allocation panel for binaries, Hubble Space Telescope, cycle 7.

1999–2002: Member, time allocation panel for stars, European Southern Observatory.

2000–2002: Member, review committee for astronomy of the Netherlands Org. for Scientific Research (NWO).

2000–2002: Member, time allocation committee of the Netherlands Foundation for Research in Astronomy (NFRA).

2000: Co-chair, Dutch Astronomer's Conference.

2001: Member, scientific organising committee "New Visions of the X-ray Universe."

2004–2006: Member, time allocation committee for CFHT and Gemini (CTAC).

2004–2006: Member, joint committee for space astronomy (JCSA).

2006–2007: Chair, joint committee for space astronomy (JCSA).

2004–2008: Deputy PI, Bright Target Explorer (BRITE; PI: A. Moffat, UdeM).

2004–2006: Member, Canadian High Energy Small Satellite planning team (PI: V. Kaspi).

2005: Member, scientific organising committee "Neutron stars at the cross-roads of fundamental physics" (August 9–13, 2005; chair J. Heyl, UBC).

2005–2006: Member, TMT-WFOS science team (PI: R. Abraham, UofT).

2006: Member, scientific advisory committee "Canadian Space Astronomy Workshop," November 23–24, 2006 (Chair R. Doyon, UdeM).

2006–2007: Member, scientific organising committee meeting "40 years of pulsars," August 12–17, 2007 (chair V. M. Kaspi, McGill).

2006–2007: Member, local organising committee "Multiplicity in Star Formation," May 16–18, 2007 (chair R. Jayawardhana, UofT).

2007–2009: Member, Discussion working group on high-energy astrophysics (PI: V. Kaspi).

2007–2008: Member, XEUS/HTRS science team.

2008: Co-chair, high-B session of Texas in Vancouver.

2008–2009: Member, local organising committee CASCA09, May 26–29, 2009 (Chair R. Jayawardhana, UofT).

2009– : IXO science team associate.

2009– : Member, An ASKAP survey for variables and slow transients (VAST).

2010–2011: Member, NuSTAR Galactic science team.

2010– : Member, Less is More project, aimed at building a series of mini-satellites.

2010– : Member, RoboAO science team.

2010: Member, XMM TAC Supernovae, Supernova Remnants, Diffuse (galactic) Emission and INS.

F: Other activities

Outreach: Part of 'Morgensterren,' a series of lectures for female high-school students (Utrecht 1998, 1999); part of class for retirees "Explosions in the Universe" (Utrecht, 2002); two interviews for spacecast.com by Natasha Eloi (2003); invited talk for the Royal Canadian Institute and Royal Astronomical Society of Canada (Toronto, 2003); appeared in UofT magazines IDEA&S and Edge (2005, 2006); invited lecture for RASC Niagara (2008); interviews for dutch newspapers and radio related to our discovery of a planetary mass companion to a young solar analog (2008); part of lectures for retirees at Glendon College (2011); interviewed on News Hour, Global TV Hamilton (2012).

Observing: Optical observations with telescopes on Calar Alto (1.2m, 2.2m), La Palma (WHT), La Silla (1m, CAT, ESO 1.5m, NTT, ESO 3.6m), Paranal (Antu), Mauna Kea (UKIRT, Keck, CFHT), Palomar Mountain (200"), Las

Curriculum Vitae

Campanas (Magellan), and Richmond Hill (DDO). Pulsar searches with Arecibo and Parkes. Analysis of data from HST, IUE, EXOSAT, ROSAT, Chandra, and XMM.

Instrumentation planning: Bright target explorer BRITE (member science team; 2004–2008); Nuclear spectroscopic telescope array NuSTAR (member Canadian science team; 2004–2005; member Galactic science team 2010–2011); “Less is More” project of mini-satellites (since 2010).

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