

# Tyrone E. Woods

---

School of Physics and Astronomy, 19 Rainforest Walk (Building 19), Monash University, Victoria, 3800, Australia  
Ph: +61 3 9902 0766 | tyrone.woods [at] monash.edu | <http://www.tewoods-astro.com/>

<b>Citizenship</b>	Canadian
<b>Languages</b>	English ( <i>fluent</i> ), French ( <i>proficient</i> )
<b>Current position</b>	Research Fellow at Monash University
<b>Research interests</b>	Stars, supernovae, ISM, compact objects, stellar populations, binary stellar evolution, galaxies
<b>Publication stats</b>	15 refereed journal articles (7 first-author, 6 second-author), 226 citations, h-index 8

## Education & Research Positions

---

08.2015–present	<b>Research Fellow</b> , Monash University	Melbourne, AUS
09.2011–06.2015	<b>PhD Physics</b> ( <i>magna cum laude</i> ), Max Planck Institute for Astrophysics / LMU Munich <ul style="list-style-type: none"><li>Supervisors: Profs. Marat Gilfanov and Rashid Sunyaev</li></ul>	Garching, DEU
09.2009–09.2011	<b>MSc Physics</b> , University of Alberta <ul style="list-style-type: none"><li>Supervisor: Prof. Natalia Ivanova</li></ul>	Edmonton, CAN
09.2005–04.2009	<b>BSc Honours Astrophysics</b> , University of Alberta	Edmonton, CAN

## Awards, Grants, & Observing Time

---

2017	<b>Lorentz Center Workshop Grant</b> , Principal Applicant	€25,000
2017	<b>JINA-CEE Conference Grant</b> , Principal Applicant	\$5,000
2017	<b>ANU 2.3m Telescope Observing Time</b> , Co-Investigator, ID: 2170118	1 night
2016	<b>XMM-Newton Observing Time</b> , Co-Investigator, ID: 080346	52 ksec
2015	<b>Magellan (Baade) Telescope Observing Time</b> , Co-Investigator, ID: CN2015B-100	1 night
2014	<b>Rudolf Kippenhahn Prize</b> , Max Planck Institute for Astrophysics <ul style="list-style-type: none"><li>Institutional award for best student publication in 2013</li></ul>	€2,000
2013	<b>Gemini Telescope Observing Time</b> , Co-Investigator, ID: GN-2013B-Q-92	8 hours
2011	<b>Profiling Alberta's Graduate Students Award</b> , University of Alberta <ul style="list-style-type: none"><li>Institutional award to support research-related travel</li></ul>	\$1,100
2009	<b>Natural Sciences and Engineering Research Council of Canada (NSERC) Undergraduate Student Research Award</b> , Athabasca University <ul style="list-style-type: none"><li>Competitive national award to fund a summer research term</li></ul>	\$4,500 + organization contribution (OC)
2008	<b>Jason Lang Scholarship</b> , University of Alberta <ul style="list-style-type: none"><li>Provincial scholarship for academic achievement</li></ul>	\$1,000

2008	<b>NSERC Undergraduate Student Research Award</b> , Athabasca University	\$4,500 + OC
2007	<b>NSERC Undergraduate Student Research Award</b> , National Institute for Nanotechnology	\$4,500 + OC

## Teaching Experience

---

	<b>Lecturer</b> , Monash University	
03.2017–05.2017	<ul style="list-style-type: none"> <li>The Interstellar Medium (<i>4th-year undergraduate course</i>)</li> </ul>	
10.2016	<ul style="list-style-type: none"> <li>Computational Astrophysics: High Energy Unit (<i>week-long unit of 3rd-year undergraduate course</i>)</li> </ul>	
02.2017, 02.2016	<ul style="list-style-type: none"> <li>Introduction to Scientific Computing: LaTeX (<i>half-day session of 4th-year undergraduate workshop</i>)</li> </ul>	
09.2009–04.2011	<b>Teaching Assistant</b> , University of Alberta	
	<ul style="list-style-type: none"> <li>Particles &amp; Waves / Fluids, Fields, &amp; Radiation (<i>lab component of 1st-year undergraduate course</i>)</li> </ul>	

## Supervisory Experience

---

01.2017–02.2017	<b>Jake King</b> , Monash University	<ul style="list-style-type: none"> <li>3rd-year undergraduate research project on He II nebulae in M33</li> </ul>
11.2015–01.2016	<b>Kieran Hirsh</b> , Monash University	<ul style="list-style-type: none"> <li>Undergraduate summer research project on He II emission in low-ionization nebulae</li> </ul>
01.2013–06.2015	<b>Hailiang Chen</b> , Max Planck Institute for Astrophysics	<ul style="list-style-type: none"> <li>PhD project on populations of accreting WD binaries (<i>co-supervised with Gilfanov, Yungelson, &amp; Han</i>)</li> </ul>
01.2011–04.2011	<b>David McBean</b> , University of Alberta	<ul style="list-style-type: none"> <li>4th-year undergraduate research project on X-ray binaries (<i>co-supervised with Ivanova</i>)</li> </ul>

## Service & Public Outreach

---

05.2017	<b>Interviewee</b> ( <i>invited</i> ), University of Alberta	<ul style="list-style-type: none"> <li>Discussed black holes and careers in science for an online astro course</li> </ul>
11.2016	<b>Public Lecturer</b> ( <i>volunteer</i> ), Monash Centre for Astrophysics	<ul style="list-style-type: none"> <li>Presented a public-level talk on Tycho's Supernova</li> </ul>
03.2017, 10.2016, 08.2016	<b>Guest Expert</b> ( <i>invited</i> ), John Monash Science School (Melbourne, Australia)	<ul style="list-style-type: none"> <li>Spoke to / helped evaluate 10th grade students in the "Quarks to Quasars" class</li> </ul>
01.2016–12.2016	<b>Seminar Coordinator</b> ( <i>invited</i> ), Monash Centre for Astrophysics	<ul style="list-style-type: none"> <li>Organized the seminar visits of 50 guest lecturers from Australia and abroad</li> </ul>
since 2015	<b>Expert Reviewer</b> ( <i>invited</i> )	<ul style="list-style-type: none"> <li>Refereed for several academic journals including <i>Monthly Notices of the Royal Astronomical Society</i> (main journal and <i>Letters</i>), <i>Physical Review D</i>, <i>The Astrophysical Journal</i>, and <i>Publications of the Astronomical Society of Australia</i>, as well as the Czech Science Foundation</li> </ul>

- 06.2011           **Space & Astronomy Panellist** (*volunteer*), Grandview Heights School (Edmonton, Canada)
- Answered 8th grade students' questions about space and astronomy
- 03.2010–09.2011   **Academic Coordinator** (*elected*), Graduate Physics Student Association (GPSA), University of Alberta
- Co-chair of the Second Annual Symposium for Graduate Physics Research
- 09.2009–09.2010   **Focus Area Representative (Astrophysics)** (*elected*), GPSA, University of Alberta
- Consulted on new faculty hires and courses as a representative of astrophysics grad students

## Talks

---

### Invited Talks & Colloquia

- |         |   |                 |
|---------|---|-----------------|
| 02.2017 | <b>Australian National University RSAA Colloquium</b> ( <i>institutional colloquium</i> )             | Canberra, AUS   |
| 06.2016 | <b>University of Athens Astrophysics Seminar</b> ( <i>institutional colloquium</i> )                  | Athens, GRC     |
| 06.2016 | <b>National Observatory of Athens IAASARS Seminar</b> ( <i>institutional colloquium</i> )             | Athens, GRC     |
| 09.2015 | <b>Monash Centre for Astrophysics Seminar</b> ( <i>institutional colloquium</i> )                     | Melbourne, AUS  |
| 01.2015 | <b>Max Planck Institute for Astrophysics Institute Seminar</b> ( <i>institutional colloquium</i> )    | Garching, DEU   |
| 09.2014 | <b>Harvard-Smithsonian Center for Astrophysics HEA Lunch Talk</b> ( <i>institutional colloquium</i> ) | Cambridge, USA  |
| 09.2014 | <b>University of Alberta Astro Seminar</b> ( <i>institutional colloquium</i> )                        | Edmonton, CAN   |
| 07.2014 | <b>Quenching and Quiescence</b> ( <i>international conference</i> )                                   | Heidelberg, DEU |
| 03.2013 | <b>Max Planck Institute for Astrophysics High Energy Seminar</b> ( <i>institutional colloquium</i> )  | Garching, DEU   |
| 12.2011 | <b>Max Planck Institute for Astrophysics High Energy Seminar</b> ( <i>institutional colloquium</i> )  | Garching, DEU   |

### Contributed Talks

- |         |  |                   |
|---------|--|-------------------|
| 11.2017 | <b>With One Hand Waving Free</b> ( <i>international conference</i> )   | Port Douglas, AUS |
| 06.2017 | <b>Forging Connections: From Nuclei to the Cosmic Web</b> ( <i>international conference</i> )                | Lansing, USA      |
| 06.2017 | <b>Fifty-One Erg</b> ( <i>international conference</i> )   | Corvallis, USA    |
| 05.2017 | <b>CASCA 2017</b> ( <i>national conference</i> )   | Edmonton, CAN     |
| 03.2017 | <b>The AGB-Supernovae Mass Transition</b> ( <i>international conference</i> )                                | Rome, ITA         |
| 02.2017 | <b>11th ANITA Theory Workshop</b> ( <i>national conference</i> )   | Hobart, AUS       |
| 08.2016 | <b>Astrophysics from LIGO's First Black Holes</b> ( <i>international workshop, invitation only</i> )         | Sta. Barbara, USA |
| 07.2016 | <b>ASA Annual Scientific Meeting 2016</b> ( <i>national conference</i> )                                     | Sydney, AUS       |
| 06.2016 | <b>Supernova Remnants: An Odyssey in Space After Stellar Death</b> ( <i>international conference</i> )       | Crete, GRC        |
| 02.2016 | <b>10th ANITA Theory Workshop</b> ( <i>national conference</i> )   | Melbourne, AUS    |
| 06.2014 | <b>The X-ray Universe 2014</b> ( <i>international conference</i> )   | Dublin, IRL       |
| 10.2013 | <b>ESO / NUVA / IAG Workshop on Challenges in UV Astronomy</b> ( <i>international conference</i> )           | Garching, DEU     |
| 09.2013 | <b>Observational Signatures of SN Ia Progenitors II</b> ( <i>international conference, invitation only</i> ) | Leiden, NLD       |
| 09.2012 | <b>Half a Century of X-ray Astronomy</b> ( <i>international conference</i> )                                 | Mykonos, GRC      |
| 05.2011 | <b>CASCA 2011</b> ( <i>national conference</i> )   | London, CAN       |
| 03.2011 | <b>Evolution of Compact Binaries</b> ( <i>international conference</i> )                                     | Viña del Mar, CHL |

# Publications

---

\* = students I have co-supervised | SAO / NASA ADS citation count = **226**, h-index = **8**

## Refereed Journal Articles

15. Haemmerlé, L., **Woods, T. E.**, Klessen, R. S., Heger, A., & Whalen, D. J. (in press). The evolution of supermassive Population III stars. *Monthly Notices of the Royal Astronomical Society*.
14. **Woods, T. E.**, Ghavamian, P., Badenes, C., & Gilfanov, M. (2017). No hot and luminous progenitor for Tycho's supernova. *Nature Astronomy*, *1*, 800–804. doi:10.1038/s41550-017-0263-5
13. **Woods, T. E.**, Heger, A., Whalen, D. J., Haemmerlé, L., & Klessen, R. S. (2017). On the maximum mass of accreting primordial supermassive stars. *The Astrophysical Journal Letters*, *842*, L6. doi:10.3847/2041-8213/aa7412
12. Johansson, J., **Woods, T. E.**, Gilfanov, M., Sarzi, M., Chen, Y.-M., & Oh, K. (2016). Diffuse gas in retired galaxies: nebular emission templates and constraints on the sources of ionization. *Monthly Notices of the Royal Astronomical Society*, *461*, 4505–4516. doi:10.1093/mnras/stw1668
11. \*Chen, H.-L., **Woods, T. E.**, Yungelson, L. R., Gilfanov, M., & Han, Z. (2016). Modelling nova populations in galaxies. *Monthly Notices of the Royal Astronomical Society*, *458*, 2916–2927. doi:10.1093/mnras/stw458
10. **Woods, T. E.**, & Gilfanov, M. (2016). Where are all of the nebulae ionized by supersoft X-ray sources? *Monthly Notices of the Royal Astronomical Society*, *455*, 1770–1781. doi:10.1093/mnras/stv2423
9. \*Chen, H.-L., **Woods, T. E.**, Yungelson, L. R., Gilfanov, M., & Han, Z. (2015). Population synthesis of accreting white dwarfs – II. X-ray and UV emission. *Monthly Notices of the Royal Astronomical Society*, *453*, 3024–3034. doi:10.1093/mnras/stv1865
8. \*Chen, H.-L., **Woods, T. E.**, Yungelson, L. R., Gilfanov, M., & Han, Z. (2014). Next generation population synthesis of accreting white dwarfs – I. Hybrid calculations using BSE + MESA. *Monthly Notices of the Royal Astronomical Society*, *445*, 1912–1923. doi:10.1093/mnras/stu1884
7. Nielsen, M. T. B., Gilfanov, M., Bogdán, Á., **Woods, T. E.**, & Nelemans, G. (2014). Upper limits on the luminosity of the progenitor of Type Ia supernova SN 2014J. *Monthly Notices of the Royal Astronomical Society*, *442*, 3400–3406. doi:10.1093/mnras/stu913
6. Johansson, J., **Woods, T. E.**, Gilfanov, M., Sarzi, M., Chen, Y.-M., & Oh, K. (2014). Diffuse gas in galaxies sheds new light on the origin of Type Ia supernovae. *Monthly Notices of the Royal Astronomical Society*, *442*, 1079–1089. doi:10.1093/mnras/stu907
5. **Woods, T. E.**, & Gilfanov, M. (2014). Emission-line diagnostics to constrain high-temperature populations in early-type galaxies. *Monthly Notices of the Royal Astronomical Society*, *439*, 2351–2363. doi:10.1093/mnras/stu072
4. **Woods, T. E.**, & Gilfanov, M. (2013). He II recombination lines as a test of the nature of SN Ia progenitors in elliptical galaxies. *Monthly Notices of the Royal Astronomical Society*, *432*, 1640–1650. doi:10.1093/mnras/stt586
3. **Woods, T. E.**, Ivanova, N., van der Sluys, M. V., & Chaichenets, S. (2012). On the formation of double white dwarfs through stable mass transfer and a common envelope. *The Astrophysical Journal*, *744*, 12. doi:10.1088/0004-637X/744/1/12
2. **Woods, T. E.**, & Ivanova, N. (2011). Can we trust models for adiabatic mass loss? *The Astrophysical Journal Letters*, *739*, L48. doi:10.1088/2041-8205/739/2/L48
1. Ivanova, N., Chaichenets, S., Fregeau, J., Heinke, C. O., Lombardi, J. C., Jr., & **Woods, T. E.** (2010). Formation of black hole X-ray binaries in globular clusters. *The Astrophysical Journal*, *717*, 948–957. doi:10.1088/0004-637X/717/2/948

## Conference Proceedings

3. **Woods, T. E.**, & Gilfanov, M. (2014). UV emission lines in passively evolving galaxies can reveal the progenitors of type Ia supernovae. *Astrophysics and Space Science*, 354, 69–74. doi:10.1007/s10509-014-2070-0
2. **Woods, T. E.**, Ivanova, N., van der Sluys, M., & Chaichenets, S. (2011). On the formation of double white dwarfs: Reevaluating how we parametrise the common envelope phase. *ASP Conference Series*, 447, 127–132.
1. **Woods, T. E.**, Ivanova, N., van der Sluys, M., & Chaichenets, S. (2010). The formation of low-mass double white dwarfs through an initial phase of stable non-conservative mass transfer. *AIP Conference Proceedings*, 1314, 24–25. doi:10.1063/1.3536378