

Curriculum Vitae

Personal Information

Full name: Adrian Sven Hamers

Date of birth: December 27 1988 (Utrecht, the Netherlands)

Nationality: Dutch and German

Citizenship: Netherlands

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Employment

- September 2019 - present: Max Planck Research Group Leader (Multiple-Star Systems) at the Max Planck Institute for Astrophysics (MPA) in Garching, Germany.
- September 2016 - 2019: postdoctoral fellow (member) at the Institute for Advanced Study, Princeton NJ, USA.

Research Interests

The long-term evolution of multi-star (binary, triple and quadruple) systems during all stages of stellar evolution, in low and high-density environments (from the field to galactic nuclei). Applications to compact object mergers, supernovae, and (exo)planets.

University Education

- September 2012 - June 2016: PhD (**cum laude**) at the Computational Astrophysics group of Leiden Observatory, Leiden University, the Netherlands.
Thesis: *Hierarchical Systems*, supervised by Simon Portegies Zwart (promotor) and Hagai Perets (co-supervisor).
- 2010-2012: MSc Astrophysics & Space Research, Utrecht University, the Netherlands (GPA 9.8/10; **cum laude**).
Thesis: *The Evolution of Coeval Stellar Hierarchical Triple Systems*, supervised by Onno Pols and Gijs Nelemans (thesis grade 10/10).
- 2007 - 2010: BSc Physics & Astronomy, Utrecht University, the Netherlands (GPA 9.3/10; **cum laude**).
Thesis: *Mergers of Massive Main Sequence Binaries*, supervised by Onno Pols and Selma de Mink (thesis grade 9.5/10).

Multiple-Star Systems Research Group Supervision at MPA

- Postdoc: in recruitment stage.
- PhD student: in recruitment stage.

Prizes and Awards

- 2018: awarded the *Christiaan Huygens Prize* (€10k), a prestigious Dutch prize from the Stichting Christiaan Huygensprijs for best Dutch astronomy PhD thesis in the period 2014-2017, and with the jury members selected by the KNAW (Royal Netherlands Academy of Arts and Sciences).
- 2017: awarded the IAU Division B PhD Prize.
- 2017: nominated for the J.C. Kok Prize for best PhD thesis of the year at the Faculty of Science at Leiden University.
- 2016: selected as Young Scientist participant at the 2016 Lindau Nobel Laureate Meeting on Physics between June 26 and July 1 in Lindau, Germany.
- 2014: selected as participant in the ISIMA 2014 Summer School on Gravitational Dynamics held in Toronto between June 30 and August 8.
- 2014: awarded travel funds (900 euro) from the Leids Kerkhoven-Bosscha Fonds.
- 2013: nominated for the *Vliegendehart Scriptieprijs 2012*, prize for best MSc thesis during the academic year 2012 at Utrecht University.
- 2008: awarded a prize from the KHMW (Koninklijke Hollandse Maatschappij der Wetenschappen) for best first-year physics results at Utrecht University.

Grants and Fellowships

- 2019-2024: Max Planck Research Group Fellowship (€1.695M; funding for Research Group including postdoc and PhD positions, and dedicated compute cluster).
- 2016-2019: IAS fellowship (\$210k).

Publications

30 publications (of which 24 first-author) with 582 total citations and 9436 reads on ADS¹; *h*-index 14. Numbers in brackets indicate the number of citations according to ADS, and contain hyperlinks to ADS. The quoted citation metrics were retrieved from ADS on October 23 2019.

First author

¹ADS is an abstract service web site for astronomy and physics papers.

1. **Hamers, A.S.**, Thompson, T.A.T. *Double neutron star mergers from hierarchical triple-star systems*. 2019, ApJ, Volume 883, Issue 1, article id. 23, 16 pp. [2]
2. **Hamers, A.S.**, Samsing, J. *Analytic computation of the secular effects of encounters on a binary: third-order perturbation, octupole, and post-Newtonian terms; steady-state distribution*. 2019, MNRAS, Volume 488, Issue 4, p.5192-5209. [1]
3. **Hamers, A.S.**, Thompson, T.A.T. *The impact of white dwarf natal kicks and stellar flybys on the rates of Type Ia supernovae in triple-star systems*. ApJ, Volume 882, Issue 1, article id. 24, 12 pp. [2]
4. **Hamers, A.S.**, Samsing, J. *Analytic computation of the secular effects of encounters on a binary: features arising from second-order perturbation theory*. 2019, MNRAS, Volume 487, Issue 4, p.5630-5648. [5]
5. **Hamers, A.S.**, Dosopoulou, F. *An analytic model for mass transfer in binaries with arbitrary eccentricity, with applications to triple-star systems*. 2019, ApJ, Volume 872, Issue 2. [11]
6. **Hamers, A.S.**, Portegies Zwart, S.F. *Catching a planet: A tidal capture origin for the exomoon candidate Kepler 1625b I*. 2018, ApJL, Volume 869, Number 2. [0]
7. **Hamers, A.S.** *Shrinking orbits in hierarchical quadruple star systems*. 2019, MNRAS, Volume 482, Issue 2, p. 2262-2276. [4]
8. **Hamers, A.S.**, Cai, M.X., Roa, J., Leigh, N. *Stability of exomoons around the Kepler transiting circumbinary planets*. 2018, MNRAS, Volume 480, Issue 3, p.3800-381. [3]
9. **Hamers, A.S.**, Bar-Or, B., Petrovich, C., Antonini, F. *The impact of vector resonant relaxation on the evolution of binaries near a massive black hole: implications for gravitational wave sources*. 2018, ApJ, Volume 865, Issue 1. [32]
10. **Hamers, A.S.** *On the rates of type Ia supernovae originating from white dwarf collisions in quadruple star systems*. 2018, MNRAS, Volume 478, Issue 1, p. 620-637. [14]
11. **Hamers, A.S.** *Secular dynamics of hierarchical multiple systems composed of nested binaries, with an arbitrary number of bodies and arbitrary hierarchical structure. II. External perturbations: flybys and supernovae*. 2018, MNRAS, Volume 476, Issue 3, p. 4139-4161. [9]
12. **Hamers, A.S.**, Tremaine, S. *Hot Jupiters driven by high-eccentricity migration in globular clusters*. 2017, AJ, Volume 143, Issue 6. [5]
13. **Hamers, A.S.**, Lai, D. *Secular chaotic dynamics in hierarchical quadruple systems, with applications to hot Jupiters in stellar binaries and triples*. 2017, MNRAS, Volume 470, Issue 2, p.1657-1672. [21]
14. **Hamers, A.S.**, Perets, H.B. *Relaxation near supermassive black holes driven by nuclear spiral arms: anisotropic hypervelocity stars, S-stars and tidal disruption events*. 2017, ApJ, Volume 846, Issue 2. [6]
15. **Hamers, A.S.** *Hints for hidden planetary companions to hot Jupiters in stellar binaries*. 2017, ApJL, Volume 835, Number 2. [7]
16. **Hamers, A.S.** *On the formation of hot and warm Jupiters via secular high-eccentricity migration in stellar triples*. 2017, MNRAS, Volume 466, Issue 4. [10]

17. **Hamers, A.S.**, Antonini, F., Lithwick, Y., Perets, H.B., Portegies Zwart, S.F. *Secular dynamics of multiplanet systems: implications for the formation of hot and warm Jupiters via high-eccentricity migration*. 2016, MNRAS, Volume 464, Issue 1, p.688-701. [24]
18. **Hamers, A.S.**, Portegies Zwart, S.F. *White dwarf pollution by planets in stellar binaries*. 2016, MNRAS Letters, Volume 462, Issue 1, p.L84-L87. [27]
19. **Hamers, A.S.**, Portegies Zwart, S.F. *Secular dynamics of hierarchical multiple systems composed of nested binaries, with an arbitrary number of bodies and arbitrary hierarchical structure. First applications to multiplanet and multistar systems*. 2016, MNRAS, Volume 459, Issue 3, p.2827-2874. [32]
20. **Hamers, A.S.**, Perets, H.B., Portegies Zwart, S.F. *A triple origin for the lack of tight coplanar circumbinary planets around short-period binaries*. 2016, MNRAS, Volume 455, Issue 3, p.3180-3200. [33]
21. **Hamers, A.S.**, Perets, H.B., Antonini, F., Portegies Zwart, S.F. *Secular dynamics of hierarchical quadruple systems: the case of a triple system orbited by a fourth body*. 2015, MNRAS, Volume 449, Issue 4, p.4221-4245. [35]
22. **Hamers, A.S.**, Portegies Zwart, S.F. *Probing the formation of planetesimals in the Galactic Centre using Sgr A* flares*. 2015, MNRAS, Volume 446, Issue 1, p.710-729. [5]
23. **Hamers, A.S.**, Portegies Zwart, S.F., Merritt, D. *Relativistic dynamics of stars near a supermassive black hole*. 2014, Volume 443, Issue 1, p.355-387. [25]
24. **Hamers, A.S.**, Pols, O.R., Claeys, J.S.W., Nelemans, G. *Population synthesis of triple systems in the context of mergers of carbon-oxygen white dwarfs*. 2013, MNRAS, Volume 430, Issue 3, p.2262-2280. [60]

Co-author

1. Samsing, J., **Hamers, A.S.**, Tyler, J.G. *The Effect of Distant Encounters on Black Hole Binaries in Globular Clusters: Systematic Increase of In-cluster Mergers in the LISA band*. 2019, PhRD, Volume 100, Issue 4, id.043010. [7]
2. Toonen, S., Perets, H.B., **Hamers, A.S.** *The rate of WD-WD head-on collisions in isolated triples is too low to explain standard type Ia supernovae*. 2018, A&A, Volume 610, id. A22. [24]
3. Antonini, F., Toonen, S., **Hamers, A.S.** *Binary black hole mergers from field triples: properties, rates and the impact of stellar evolution*. 2017, ApJ, Volume 841, Issue 2, article id. 77. [80]
4. Toonen, S., **Hamers, A.S.**, Portegies Zwart, S.F. *The evolution of hierarchical triple star-systems*. 2016, Computational Astrophysics and Cosmology, Volume 3, Issue 1. [54]
5. Antonini, F., **Hamers, A.S.**, Lithwick, Y. *Dynamical constraints on the origin of hot and warm Jupiters with close friends*. 2016, AJ, Volume 152, Issue 6, article id. 174. [26]
6. Jílková, L., **Hamers, A.S.**, Hammer, M., Portegies Zwart, S.F. *Mass transfer between debris discs during close stellar encounters*. 2016, MNRAS, Volume 457, Issue 4, p.4218-4235. [17]

Outreach and Miscellaneous Academic Activities

- SOC member for the workshop *Stellar Dynamics in Galactic Nuclei* (co-organized with Scott Tremaine, Jean-Baptiste Fouvry and Ben Bar-Or) held at the IAS between November 29 and December 1 2017.
- SOC member for a three-day workshop on black hole dynamics (co-organized with Nathan Leigh, Piet Hut and Johan Samsing) held at the AMNH in NYC on November 24 and 25.
- SOC member for a workshop on numerical scattering (co-organized with Nathan Leigh, Piet Hut, Johan Samsing and Mario Spera) held at the CCA in NYC between December 4 and December 8 2017.
- IAS Informal Seminar organizer for the fall 2017 and spring 2018 terms.
- Referee for MNRAS (9x), Phys. Rev. D (3x), Phys. Rev. Letters (1x), ApJ (1x), ApJL (2x), and Celestial Mechanics and Dynamical Astronomy (1x).
- Reviewer for the NASA Exoplanets Research Program (2017).
- Public outreach articles: planetesimals in the Galactic Center ([link](#); in Dutch), exomoons around circumbinary planets ([link](#)), and habitability of binary stars (*All About Space*, an astronomy and space science magazine).
- IAU Junior Member.

Teaching and Mentoring Experience

- 2019: supervised two Chinese students (Ruoye Tian and Nier Zhang) at GEC Academy (<https://gecacademy.cn>) on astrophysics summer projects.
- 2014 and 2015: teaching assistant at Leiden University for a bachelor course on special relativity.
- 2014: co-supervised MSc student Emiel Por on his thesis on post-Newtonian dynamics (now a PhD student at Leiden Observatory).
- 2013: co-supervised BSc student Huibert het Lam on his thesis on the dynamics of triple black hole systems (now a PhD student at the Institute for Theoretical Physics at Utrecht University).
- 2013: teaching assistant at Leiden University for a bachelor course on optics.
- 2009-2012: student assistant at Utrecht University for various bachelor physics and mathematics courses: mathematical techniques for physicists, electromagnetism, special relativity, and Fourier analysis.
- 2008-2011: personal tutor in mathematics, physics, and chemistry for secondary school students.

Talks, Conferences, Work Visits, and Summer Schools

- 2019 October 10: ESO, Garching – **Invited** Munich Joint Astronomy Colloquium.

- 2019 September 23: Max Planck Institute for Astrophysics, Garching – **invited** seminar.
- 2019 July 7-9: T.D. Lee Institute, Shanghai – **invited** talk at conference *Astrophysical Dynamics*.
- 2019 February 18-20: Harnack House Berlin, Max Planck Society – **invited** (job) talk.
- 2019 January 24: Niels Bohr International Academy – **invited** (job) talk.
- 2018 December 4-7: CIERA – **invited** seminar during Cluster Dynamics workshop.
- 2018 October 29-30: CfA/ITC – **invited** Stars & Planets Seminar.
- 2018 October 18: CCA, NYC – contributed talk at *Fewbody* meeting.
- 2018 October 1-5: CITA – **invited** seminar.
- 2018 September 10-14: Lorentz Center, Leiden – **invited** talk at conference *Triple Evolution and Dynamics Trendy-2*.
- 2018 August 27-30: IAU General Assembly, Vienna (supported by the IAU in connection to the IAU Division B PhD Prize) – **invited** talk.
- 2017 December 8: CCA, NYC – **invited** talk.
- 2017 December 4 - December 8: CCA, NYC – **invited** talk at a workshop on numerical scattering.
- 2017 November 29 - December 1: IAS – **co-organized** workshop *Stellar Dynamics in Galactic Nuclei*.
- 2017 November 24 - November 25: AMNH, NYC – **invited** talk during workshop on black hole dynamics.
- 2017 November 6 - November 10: CIERA – **invited** CIERA Special Seminar (host Fabio Antonini).
- 2017 November 7: University of Chicago – seminar (host Daniel Fabrycky).
- 2017 October 11: University of Florida – **invited** seminar.
- 2017 July 19 - August 3: Center for Planetary Science, Kobe, Japan – writing workshop hosted by Jun Makino (RIKEN Institute) and Piet Hut (IAS).
- 2017 March 26 - April 1: Aspen, CO – accepted talk at conference *Formation and Dynamical Evolution of Exoplanets*.
- 2017 March 21: AMNH, NYC – **invited** seminar.
- 2017 January 29: Racah Institute for Physics, Jerusalem – seminar.
- 2017 January 15 - February 3: Technion, Haifa – work visit hosted by Hagai Perets.
- 2016 September 6 - September 9: AMNH, NYC – contributed talk at conference MODEST-16 NYC.
- 2016 June 26 - July 1: Lindau, Germany – Young Scientist participant at the 2016 Lindau Nobel Laureate Meeting on Physics.
- 2016 May 12: Leiden University – colloquium.
- 2016 April 22: Leiden University – seminar.
- 2016 January 17 - January 20: IAS – **invited** Informal Seminar.

- 2015 September 13 - September 19: CIERA – **invited** CIERA Special Seminar (host Fabio Antonini).
- 2015 May 31 - June 5: Technion, Haifa – contributed talk at conference *Triple evolution & dynamics in stellar and planetary systems*.
- 2015 May 25 - May 31: Technion, Haifa – work visit hosted by Hagai Perets.
- 2015 February 20: Leiden University – contributed talk at conference *Fourth Dutch Gravitational Wave meeting*.
- 2014 August 14 - September 14: Rochester Institute of Technology – work visit hosted by David Merritt. **Invited** lunch talk.
- 2014 May 30 - August 8: CITA – student at ISIMA summer school on gravitational dynamics.
- 2013 September 16 - September 27: Alájar, Spain – contributed talk at conference *Stellar dynamics and growth of massive black holes*.
- 2013 July 1: University of Amsterdam – contributed talk at conference *NOVA Galactic Center Day*.
- 2013 February 23 - March 8: Rochester Institute of Technology – work visit hosted by David Merritt.