

Na'ama Hallakoun

ASTROPHYSICS POSTDOCTORAL FELLOW

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Summary

I am a Benoziyo prize postdoctoral fellow at the Weizmann Institute of Science. I completed my Ph.D. in astrophysics in 2019, working under the supervision of Prof. Dan Maoz at Tel-Aviv University. During my Ph.D. I spent a couple of years with an ESO Studentship (ESO advisor: Dr. Ferdinando Patat), and another couple of years as a visitor, at the European Southern Observatory headquarters in Garching, Germany.

I have published **18 scientific papers (11 of them as a first or second author)**, with an **h-index of 11**. I have an extensive observational experience from the ultraviolet to the near infrared, both with small and large telescopes, and have led a number of successful competitive observing proposals, including **nearly 100 hours as a PI on the ESO VLT**. I am also an **associate member of the LISA Consortium** and a member of its Astrophysics Working Group.

Research Interests

White dwarfs; white dwarfs in binary systems and other compact-object binaries; Type-Ia supernova progenitors; double white dwarfs as gravitational-wave sources; planetary systems and debris around white dwarfs; stellar populations; the initial mass function.

Positions

Benoziyo Prize Fellow

WEIZMANN INSTITUTE OF SCIENCE

Astrophysics postdoctoral fellowship

[Israel](#)

2019–PRESENT

Education

Ph.D. in Astrophysics

TEL-AVIV UNIVERSITY

- Advisor: Prof. Dan Maoz
- Thesis: *Companions and Debris Around White Dwarfs*

[Israel](#)

2014–2019

2015–2017

ESO STUDENTSHIP

European Southern Observatory, Germany. Advisor: Dr. Ferdinando Patat

M.Sc. in Physics

TEL-AVIV UNIVERSITY

- Advisor: Prof. Lev Vaidman
- Thesis: *Subjective Randomness in Quantum Mechanics*
- *magna cum laude*

[Israel](#)

2011–2013

B.Sc. in Physics

TEL-AVIV UNIVERSITY

[Israel](#)

2008–2011

B.A. in History

THE OPEN UNIVERSITY

- *magna cum laude*

[Israel](#)

2002–2009

Scholarships, Honors & Awards

SCHOLARSHIPS

2019–2022 **Benoziyo Prize Postdoctoral Fellowship**, Weizmann Institute of Science

[Israel](#)

2017 **The Dan David Scholarship**, awarded by the Dan David Foundation and the Prize Laureates

[Israel](#)

2015–2017 **ESO Studentship**, European Southern Observatory

[Germany](#)

HONORS & AWARDS

| | | |
|------|--|------------------------|
| 2018 | Certificate of Merit for Exceptional Contribution to the Tel-Aviv University Astronomy Club, Tel-Aviv University | Israel |
| 2018 | The John Bahcall Astrophysics Graduate Student Prize for Excellence in Research, Tel-Aviv University | Israel |
| 2017 | The Anne and Maurice Cohen Excellence in Research Award, Tel-Aviv University | Israel |
| 2016 | The Getty Excellence in Research Award, Tel-Aviv University | Israel |
| 2008 | The Dean's List for Excellence in Studies, The Open University | Israel |
| 2004 | The Dean's List for Excellence in Studies, The Open University | Israel |

Teaching Experience

Lab Instructor

TEL-AVIV UNIVERSITY

[Israel](#)
2014–2015, 2017–2019

Tutoring in second year undergraduate physics lab classes

Developing a New Lab Experiment

TEL-AVIV UNIVERSITY

[Israel](#)
2018

Developing a new observational astrophysics experiment for second year undergraduate physics lab class

Teaching Assistant

TEL-AVIV UNIVERSITY

[Israel](#)
2014–2015

Teaching assistant in Physics 1 (Newtonian mechanics) for first year engineering students

Lab Instructor

TEL-AVIV UNIVERSITY

[Israel](#)
2011–2012

Tutoring in first year undergraduate physics lab classes

Public Outreach

The Davidson Institute of Science Education

WRITER AND LECTURER

[Israel](#)
2022–PRESENT

The Davidson Institute is a non-profit organization aimed at public outreach, which serves as the educational arm of the Weizmann Institute of Science.

- Writing articles about physics and astrophysics for the general audience and kids (in Hebrew). The articles are published on the Davidson Institute website and in the general Israeli media.
- Giving outreach lectures to high-school students from Israel and abroad.

TAU AstroClub

CO-ORGANIZER

[Israel](#)
2014–2019

The Tel-Aviv University Astronomy Club (AstroClub for short) is a public outreach organization, operated voluntarily by graduate students of the Department of Astrophysics of Tel-Aviv University. The activities are open to the general public, and include monthly lectures given by leading scientists, sidewalk observations, and open days at the Wise Observatory.

- Co-organizing the TAU AstroClub activities.
- Organizing an open day at the Wise Observatory, attended by about 700 visitors.
- Participating in the Hebrew translations of the *Astronomy Picture of the Day* and *Galaxy Zoo*.
- Designing and maintaining the new website of the club.

Scientific Community Service

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| 2022– | Associate Member of the LISA Consortium Texas Tech University LISA Group; Astrophysics Working Group | ESA |
| 2019– | Referee for <i>The Astrophysical Journal</i> | |
| 2017 | Local Organizing Committee of the Impact of Binaries on Stellar Evolution workshop | ESO Germany |
| 2016–2017 | Co-organizer of the ESO Wine and Cheese seminar | ESO Germany |
| 2015–2017 | Scientific Assistant for the ESO Observing Programmes Committee (P97, P99 & P100) | ESO Germany |

Observational Experience

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|-----------|---|---|
| 2014–2021 | Wise Observatory , Extensive experience (≥ 500 nights, including ≥ 400 nights as an observer) with the 1 m, 0.71 m, and 0.46 m telescopes. | <i>Israel</i> |
| 2015–2021 | Very Large Telescope (VLT) , 96.3 h as a PI using UVES; 23 h as a Co-I, using FORS, X-SHOOTER, and HAWKI. | <i>ESO Paranal, Chile</i> |
| 2015–2022 | Las Cumbres Observatory (LCO) , Extensive experience with design and execution of observations with the 1 m network (>1170 h), 0.4 m network (>300 h), and 2 m network (~ 5 h). | <i>LCOGT</i> |
| 2019–2022 | Large Binocular Telescope (LBT) , 27.6 h as a Co-I using MODS. | <i>Mount Graham, Arizona</i> |
| 2017–2020 | Southern African Large Telescope (SALT) , ~ 80 h as a Co-I, using the High Resolution Spectrograph (HRS). | <i>South Africa</i> |
| 2019–2020 | Gran Telescopio Canarias (GTC) , 12.4 h as a Co-I using OSIRIS. | <i>La Palma, Spain</i> |
| 2019–2022 | Gemini Observatory , 1.4 h as a delegated PI using F2; 2.5 h as a Co-I using GMOS. | <i>Mauna Kea, Hawaii; Cerro Pachón, Chile</i> |
| 2016 | New Technology Telescope (NTT) , 6 nights as a PI , using ULTRACAM and SofI. | <i>ESO La Silla, Chile</i> |
| 2016 | Hubble Space Telescope (HST) , 10 orbits as a Co-I including Phase II submission, using COS. Archival data , Extensive experience with analysis of photometric and spectroscopic data from publicly available surveys and archives, including <i>K2</i> , <i>Kepler</i> , ESO, SDSS, and <i>Gaia</i> . | <i>Cycle 23</i> |

Computer Skills

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| Advanced | Matlab, Python |
| Intermediate | C, Mathematica, IRAF |
| Basic | Tlusty, Synspec, MESA |
| Miscellaneous | MediaWiki, Wordpress, SQL |

Talks & Seminars

An ultra-hot irradiated likely brown dwarf orbiting a white dwarf

08/2022 **EuroWD22: The 22nd European Workshop on White Dwarfs**, University of Tübingen, Germany (online)

Characterizing the Galactic double white dwarf population

| | | |
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| 07/2022 | Astrophysics Seminar , University of Sheffield, UK (online) | <i>Invited</i> |
| 04/2022 | Astrophysics Seminar , Bar-Ilan University, Israel | <i>Invited</i> |
| 07/2021 | O-MESS: Online-Meetings on Evolved Stars and Systems , (online) | |
| 03/2021 | KITP Conference: White Dwarfs from Physics to Astrophysics , UC Santa Barbara, USA (online) | <i>Invited</i> |

Companions and debris around white dwarfs

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|---------|--|----------------|
| 01/2021 | Astrophysics Seminar , University of Birmingham, UK (online) | <i>Invited</i> |
| 12/2020 | Astrophysics Seminar , Ben-Gurion University, Israel (online) | <i>Invited</i> |
| 05/2020 | Astrophysics Seminar , The Technion, Israel (online) | <i>Invited</i> |
| 05/2020 | Astrophysics Seminar , Bar-Ilan University, Israel (online) | <i>Invited</i> |
| 10/2019 | Gemini Science Talk , Gemini Observatory, Hawai'i, USA | |
| 04/2019 | Astrolunch , The Hebrew University, Israel | <i>Invited</i> |
| 03/2019 | Astrophysics Seminar , Tel-Aviv University, Israel | |
| 03/2019 | Group Meeting , University of Potsdam, Germany | |

Planets and debris around white dwarfs

10/2021 **2nd ULTRASAT workshop**, Weizmann Institute of Science, Israel *Invited*

Are there enough double white dwarf mergers to explain the Milky Way's SN Ia rate?

- 02/2021 **The 66th Annual Meeting of the Israel Physical Society**, Israel (online)
- 01/2020 **Astrophysics Department Transient Workshop**, Weizmann Institute of Science, Israel
- 10/2019 **IAU Symposium 357: White Dwarfs as Probes of Fundamental Physics and Tracers of Planetary, Stellar & Galactic Evolution**, Hilo, Hawai'i, USA
- 07/2019 **The Beginning and Ends of Double White Dwarfs**, Copenhagen, Denmark
- 02/2019 **Milky Way Meeting**, Max Planck Institute for Astronomy, Heidelberg, Germany
- 07/2018 **EuroWD18: The 21st European Workshop on White Dwarfs**, The University of Texas at Austin, Texas, USA
- 05/2018 **ESO Informal Discussion**, ESO Garching, Germany
- 02/2018 **Observational Signatures of Type Ia Supernova Progenitors III**, Lorentz Center, The Netherlands
- 10/2017 **Transients from Compact Objects**, Peking University, China
- 07/2017 **The Impact of Binaries on Stellar Evolution**, ESO Garching, Germany

Once in a blue moon: detection and explanation of “bluing” during debris transits in WD 1145+017

- 01/2019 **Astronomical Time Series 2019**, Max Planck Institute for Astronomy, Heidelberg, Germany
- 03/2017 **Planetary Systems Beyond the Main Sequence II**, The Technion, Israel
- 07/2016 **EuroWD16: The 20th European Workshop on White Dwarfs**, University of Warwick, UK

The measure of existence of a quantum world and the Sleeping Beauty problem

- 06/2015 **Quantum Optics Seminar**, Max Planck Institute of Quantum Optics, Germany
- 06/2013 **Particle Physics Seminar**, Tel-Aviv University, Israel

Conferences & Schools Attended

- 08/2022 **EuroWD22: The 22nd European Workshop on White Dwarfs**, The University of Tübingen, Tübingen, Germany (online) *talk*
- 07/2021 **Physics Days at Warwick: Summer workshop on white dwarfs and related objects**, University of Warwick, UK (online)
- 03/2021 **KITP Conference: White Dwarfs from Physics to Astrophysics**, UC Santa Barbara, USA (online) *invited talk*
- 02/2021 **The 66th Annual Meeting of the Israel Physical Society**, Israel (online) *talk*
- 10/2019 **IAU Symposium 357: White Dwarfs as Probes of Fundamental Physics and Tracers of Planetary, Stellar & Galactic Evolution**, Hilo, Hawai'i, USA *talk*
- 07/2019 **The Beginning and Ends of Double White Dwarfs Conference + Workshop**, Copenhagen, Denmark *talk + workshop invitation*
- 01/2019 **Astronomical Time Series 2019**, Max Planck Institute for Astronomy, Heidelberg, Germany *talk*
- 09/2018 **The 13th IMPRS-HD Summer School: Gaia Data & Science**, The Max Planck Society and the University of Heidelberg, Germany
- 07/2018 **EuroWD18: The 21st European Workshop on White Dwarfs**, The University of Texas at Austin, Texas, USA *talk*
- 02/2018 **Observational Signatures of Type Ia Supernova Progenitors III**, Lorentz Center, The Netherlands *talk*
- 12/2017–01/2018 **The 35th Jerusalem Winter School in Theoretical Physics: The Physics of Astronomical Transients**, The Hebrew University, Israel *poster*
- 10/2017 **Transients from Compact Objects**, Peking University, China *talk*
- 07/2017 **The Impact of Binaries on Stellar Evolution**, ESO, Germany *talk*
- 03/2017 **Planetary Systems Beyond the Main Sequence II**, Technion, Israel *talk*
- 07/2016 **EuroWD16: The 20th European Workshop on White Dwarfs**, University of Warwick, UK *talk*
- 10/2014 **Transients' Unsolved Mysteries Workshop**, Eilat, Israel
- 06/2013 **Qstart – Physics, Computer Science, Mathematics: Thoughts on Quantum Information**, The Hebrew University, Israel

Refereed Publications

MAJOR CONTRIBUTIONS

1. Valeriya Korol*, **Na'ama Hallakoun***, Silvia Toonen, and Nikolaos Karnesis
“Observationally driven Galactic double white dwarf population for *LISA*”
2022, *Monthly Notices of the Royal Astronomical Society*, 511, 5936
*Equal contribution
2. **Na'ama Hallakoun** and Dan Maoz
“A bottom-heavy initial mass function for the likely-accreted blue-halo stars of the Milky Way”
2021, *Monthly Notices of the Royal Astronomical Society*, 507, 398
3. **Na'ama Hallakoun** and Dan Maoz
“Limits on a population of collisional-triples as progenitors of Type-Ia supernovae”
2019, *Monthly Notices of the Royal Astronomical Society*, 490, 657
4. Siyi Xu, **Na'ama Hallakoun**, Bruce Gary, et al.
“Shallow ultraviolet transits of WD 1145+017”
2019, *The Astronomical Journal*, 157, 255
5. Ferdinando Patat and **Na'ama Hallakoun**
“Type Ia supernovae: where are they coming from and where will they lead us?”
2019, in Beccari G., Boffin H. M. J. eds, Cambridge Astrophysics, *The Impact of Binary Stars on Stellar Evolution*, Cambridge University Press, Cambridge, Chapt. 12, pp 167–180
6. Dan Maoz, **Na'ama Hallakoun** and Carles Badenes
“The separation distribution and merger rate of double white dwarfs: improved constraints”
2018, *Monthly Notices of the Royal Astronomical Society*, 476, 2584
7. **Na'ama Hallakoun**, Dan Maoz, Eric Agol, Warren R. Brown, Patrick Dufour, Jay Farihi, Boris Gänsicke, Mukremin Kilic, Alekzander Kosakowski, Abraham Loeb, Tsevi Mazeh, and Fergal Mullally
“Periodic optical variability and debris accretion in white dwarfs: a test for a causal connection”
2018, *Monthly Notices of the Royal Astronomical Society*, 476, 933
8. **N. Hallakoun**, S. Xu, D. Maoz, T. R. Marsh, V. D. Ivanov, V. S. Dhillon, M. C. P. Bours, S. G. Parsons, P. Kerry, S. Sharma, K. Su, S. Rengaswamy, P. Pravec, P. Kušnirák, H. Kučáková, J. D. Armstrong, C. Arnold, N. Gerard, and L. Vanzì
“Once in a blue moon: detection of ‘bluing’ during debris transits in the white dwarf WD 1145+017”
2017, *Monthly Notices of the Royal Astronomical Society*, 469, 3213
9. Dan Maoz and **Na'ama Hallakoun**
“The binary fraction, separation distribution, and merger rate of white dwarfs from SPY”
2017, *Monthly Notices of the Royal Astronomical Society*, 467, 1414
10. **N. Hallakoun**, D. Maoz, M. Kilic, T. Mazeh, A. Gianninas, E. Agol, K. J. Bell, S. Bloemen, W. R. Brown, J. Debes, S. Faigler, I. Kull, T. Kupfer, A. Loeb, B. M. Morris, and F. Mullally
“SDSS J1152+0248: an eclipsing double white dwarf from the Kepler K2 campaign”
2016, *Monthly Notices of the Royal Astronomical Society*, 458, 845
11. Berry Groisman, **Na'ama Hallakoun** and Lev Vaidman
“The measure of existence of a quantum world and the Sleeping Beauty problem”
2013, *Analysis*, 73, 695

OTHER REFEREED PUBLICATIONS

1. Charles D. Kilpatrick **et al.**
“The Gravity Collective: A Search for the Electromagnetic Counterpart to the Neutron Star-Black Hole Merger GW190814”
2021, *The Astrophysical Journal*, 923, 258
2. Sumit K. Sarbadhicary **et al.**
“The RR Lyrae Delay-Time Distribution: A Novel Perspective on Models of Old Stellar Populations”
2021, *The Astrophysical Journal*, 912, 140
3. R. Lunnan **et al.**
“Four (Super)luminous Supernovae from the First Months of the ZTF Survey”
2020, *The Astrophysical Journal*, 901, 61
4. Ł. Wyrzykowski **et al.**
“Full orbital solution for the binary system in the northern Galactic disc microlensing event Gaia16aye”
2020, *Astronomy & Astrophysics*, 633, A98

5. T. Boyajian **et al.**
“The first post-Kepler brightness-dips of KIC 8462852”
2018, *Astrophysical Journal Letters* , 853, L8
6. S. Xu, S. Rappaport, R. van Lieshout, A. Vanderburg, B. Gary, **N. Hallakoun**, V. D. Ivanov, M. C. Wyatt, J. DeVore, et al.
“A dearth of small particles in the transiting material around the white dwarf WD 1145+017”
2018, *Monthly Notices of the Royal Astronomical Society* , 474, 4795
7. N. Koshimoto **et al.**
“MOA-2016-BLG-227Lb: A massive planet characterized by combining lightcurve analysis and Keck AO imaging”
2017, *The Astronomical Journal* , 154, 3

SUBMITTED PUBLICATIONS

1. Tsevi Mazeh **et al.**
“Probable Dormant Neutron Star in a Short-Period Binary System”
2022, *submitted to MNRAS* , arXiv:2206.11270
2. **Na’ama Hallakoun** et al.
“An ultra-irradiated likely brown dwarf orbiting a white dwarf”
2022, *submitted*