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Research positions

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| Oct. 2026 – |  Nicolaus Copernicus Astronomical Center, the Polish Academy of Sciences , Tenure-Track (upcoming). |
| Oct. 2023 – Sept. 2026 |  Max Planck Institute for Astrophysics , Postdoctoral Fellow. |
| Oct. 2019 – Sept. 2023 |  Nicolaus Copernicus Astronomical Center, the Polish Academy of Sciences , PhD student. |
| Oct. 2018 – Sept. 2019 |  Center of Theoretical Physics, the Polish Academy of Sciences . A scholarship student under the MAESTRO research grant (PI B. Czerny). |

Education

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| Oct. 2019–Sept. 2023 |  Nicolaus Copernicus Astronomical Center, Warsaw . Ph.D. degree (Cum laude), thesis defense on Sept. 29th, 2023. |
| 2017–2019 |  University of Warsaw, Department of Physics . M.Sc. in Astronomy. |
| 2013–2017 |  Warsaw University of Technology, Department of Physics . B.Sc. in Applied Physics. |

Selected talks and seminars

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| October 2025 |  Munich, Germany; [Invited Talk] <i>Gravitational Waves from Stars Stripped by Supermassive Black Holes</i> during conference ORIGINS Black Hole Days. |
| October 2025 |  Paris, France; [Talk] <i>The Origin and Formation Channels of GW sources - Current Status</i> during the meeting Journees de l'ATPEM 2025. |
| September 2025 |  Catania, Italy; [Invited Talk] <i>Formation Pathways of GW Sources: Isolated Binary Evolution vs. Dynamical Channels</i> during conference Crossroads in Strong Gravity Challenges & Future Directions. |
| September 2025 |  Oxford, England; [Invited Talk] <i>The Origin and formation channels of LVK gravitational wave sources: current status</i> during conference 5th Philip Wetton Workshop. |
| June 2025 |  Madrid, Spain; [Talk] <i>Supermassive black hole with a stripped subgiant companion as a GW source detectable by LISA</i> during conference X-ray Quasi-Periodic Eruptions & Repeating Nuclear Transients |
| June 2025 |  Princeton, USA; [Seminar] <i>The origin of gravitational wave sources. Isolated binary progenitors of binary black hole mergers</i> . Informal seminar for the research group of prof. Eliot Quataert at Princeton University, Department of Astrophysical Sciences. |
| April 2025 |  Milano, Italy; [Seminar] <i>Supermassive black holes stripping a subgiant star down to its helium core: a new type of multi-messenger source for LISA</i> . Seminar for the astrophysics department of Milano Bicocca. |

Selected talks and seminars (continued)

- March 2025 ──► Munich, Germany; [Talk] *Supermassive black holes stripping a subgiant star down to its helium core: a new type of multi-messenger source for LISA*. Talk during MIAPbP workshops *Unveiling a Universe of Black Holes: The next Generation of AGN Surveys*.
- December 2024 ──► Paris, France; [Seminar] *The origin of compact object mergers*. Seminar for high energy group of the Institut d'Astrophysique de Paris.
- September 2024 ──► Garching bei Munchen, Germany; [Talk] *Gravitational wave signal from circular, mass transferring star- supermassive black hole systems* during conference *LISA Astrophysics Working Group Meeting 2024*.
- October 2024 ──► Leiden, Netherlands; [**Invited Talk**] *The origin of compact object mergers. Isolated binary formation scenarios*. during conference *Challenges and future perspectives in gravitational-wave- wave astronomy: O4 and beyond*.
- September 2024 ──► Warsaw, Poland; [Talk] *Gravitational wave signal from circular, mass transferring star- supermassive black hole systems* during conference *Galactic and extragalactic X-ray transients, theory and observational perspectives*.
- August 2024 ──► Cape Town, South Africa; [Talk] *Unequal-mass, highly-spinning binary black hole mergers in stable mass transfer formation channel* during *IAU General Assembly 2024*.
- July 2024 ──► Liege, Belgium; [Talk] *Unequal-mass, highly-spinning binary black hole mergers in stable mass transfer formation channel* during *41st Liège International Astrophysical Colloquium: The eventful life of massive star multiples*.
- May 2024 ──► Birmingham, UK; [**Invited Panelist**] *Panel Discussion - Binary Formation Channels* during *Gravitational Wave Physics and Astronomy Workshop GWPAW 2024*.
- March 2024 ──► Warsaw, Poland; [Seminar] *Fingerprints of binary star interactions in the parameters of binary black hole mergers* - department seminar at Warsaw Astronomical Observatory.
- November 2023 ──► Garching bei Munchen, Germany; [Seminar] *The origin of gravitational wave sources. Isolated binary progenitors of binary black hole mergers* - department seminar at Max Planck Institute of Astrophysics.
- July 2023 ──► Milano, Italy; [Panelist] *What can/should astrophysicists and pop-synthers predict? during Gravitational-wave populations: what's next?*
- Jan. 2023 ──► Garching bei Munchen, Germany; [Seminar] *What can we learn about stars from gravitational waves?* - seminar at Max Planck Institute for Astrophysics during Stellar Department Meeting.
- Jan. 2023 ──► Quy Nhon, Vietnam; [**Invited Talk**] *What can we learn about stars from gravitational waves?* during *Rencontres du Vietnam. TMEX-2023 Conference*.
- April 2022 ──► San Juan, Puerto Rico; [Talk] *The role of supernova convection for the depth of lower mass gap and the isolated binary formation of LVK sources* during *2022 INTERMEDIATE-MASS BLACK HOLES New Science from Stellar Evolution to Cosmology*.
- Nov. 2021 ──► Torun, Poland; [Seminar] *Impact of common envelope development criteria on the formation of BH-BH mergers* - departmental seminar at Nicolaus Copernicus Astronomical Center in Torun.
- Nov. 2021 ──► Online; [Seminar] *The origin of BH-BH mergers. The isolated binary evolution scenario*. Seminar for high energy group of the Institut d'Astrophysique de Paris.
- Sept. 2021 ──► Online; [Talk] *Impact of common envelope development criteria on the formation of LIGO/Virgo sources* during *XL Congress of the Polish Astronomical Society 2021*.
- Aug. 2021 ──► Lisbon, Portugal; [Talk] *Impact of common envelope development criteria on the formation of LIGO/Virgo sources* during *Global meeting of the GWVerse COST action Lisbon*.
- July 2021 ──► Online; [Talk] *Binary neutron star formation and the origin of GW170817* during *Sixteenth Marcel Grossman Meeting*.

Selected talks and seminars (continued)

- Sept. 2019 ┌ Warsaw, Poland; [Talk] *Synthetic catalog of black holes in the Milky Way during Astrophysics with GW detections.*

Summer schools

- Aug. 2022 ┌ Sanata Barbara, USA. Participation in *The 2022 MESA Summer School*.
- Aug. 2021 ┌ Copenhagen, Denmark. Participation in *NBIA Summer School on Gravitational Wave Astrophysics*.

Awards and funding

- Jun 2025 ┌ Winner of **Procope Mobility** scholarship for 1-month research visit sponsored by the French Embassy in Germany (declined).
- Feb 2025 ┌ Winner of **SALTO** exchange program between MPG, Germany, and CNRS, France.
- July 2024 ┌ **Lindau Nobel Laureate Meeting** participant (1 of ~ 650 selected globally, 1 of 8 in Poland)
- July 2022 ┌ Winner of scholarships from **the Minister of Education and Science (Poland)** for outstanding young scientists in 2022.
- May 2022 ┌ Winner of **START 2022** stipend of the Foundation for Polish Science dedicated to 100 best young scientists (under 30 year old) that represent all fields of science with additional honor award of **the Prof. Adam Sobiczewski Prize** for researchers who conduct scientific research in the field of mathematics, theoretical physics, or astronomy.
- Dec. 2021 ┌ Winner of **Award for young researcher 2021** of Nicolaus Copernicus Astronomical Center.

Skills

- Programming ┌ C, C++, Python, Bash, LaTeX,
- Other tools ┌ Overleaf, Population synthesis codes, MESA
- Language ┌ Polish (native), English (excellent), French (beginner), German (beginner)

Additional activities

Duties and roles

- ─ Team member (by invite) of the International Space Science Institute project titled: *Can we be spin doctors and determine the spins of black holes?* led by prof A. Zdziarski.
- ─ Core member of LISA Consortium (since May 2025).
- ─ Postdoc representative at Max Planck Institute for Astrophysics (since June 2024).
- ─ Part of the Stellar Department's recruitment committee in selecting PhD candidates for IMPRS program
- ─ Referee for journals: Nature, Nature Communications, Nature Astronomy, MNRAS, ApJ, ApJL, A&A
- ─ PhD students representative in the Scientific Council (2021/22) of the Nicolaus Copernicus Astronomical Center, Warsaw.

Additional activities (continued)

Organization

- Part of Scientific Organizing Committee of the conference: *Many Faces of Black Holes* (upcoming) <https://sites.google.com/view/bh-nepal-2026/home>
- Member of the Organizing Committee of the Joint Ringberg Conference for Postdocs of the Max Planck Institute for Astrophysics and the Max Planck Institute for Extraterrestrial Physics.
- Part of Local Organizing Committee of LISA Astrophysics Working Group Meeting at Max Planck Institute for Astrophysics: <https://events.gwdg.de/event/875/overview>
- Co-organized Stellar Department Seminars (SESTAS) at Max Planck Institute for Astrophysics (2023/24)
- Organizer and main coordinator of *5th Meeting of young astronomers* 2022 at Nicolaus Copernicus Astronomical Center (online). Event website: <https://events.camk.edu.pl/event/41/>.

Teaching

- Teaching Assistant during MESA workshops being a part of *IAU General Assembly 2024, Cape Town* (IAU Hackathons).
- Physics and Computer Science teacher for middle and high school students during two editions of the school under the sails program, Niebieska Szkoła, specifically the 14th edition (September-November 2016) and the 24th edition (January-March 2020).
- Supervision of undergraduate students; onboarding of new group members (PhD students and postdoctoral researchers) to the scientific scope and software tools of the research group.

Science popularization

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| August 2025 | ■ AAS Nova highlight for AAS's peer-reviewed journals summarizing my publication by <i>Supermassive Black Holes and Stripped Subgiants: Significant Signals for Future Gravitational Wave Detectors</i> . |
| August 2025 | ■ My Monthly Highlights of MPI for Astrophysics titled <i>Gravitational Waves from Stars Stripped by Supermassive Black Holes?</i> |
| April 2025 | ■ Phys.org and Universe Today . Popular science articles summarizing my publication by <i>Phys.org</i> and <i>Universe Today</i> titled <i>Supermassive black holes could strip stars down to their helium cores</i> |
| April 2025 | ■ Science News Today Popular science articles summarizing my publication <i>Science News Today</i> titled <i>Quiet Deaths: Helium Stars Spiraling into Supermassive Black Holes</i> |
| Oct. 2022 | ■ Magazine ACADEMIA . Article for ACADEMIA, the Magazine of Polish Academy of Sciences: <i>Space-time ripples</i> |
| July 2022 | ■ Magazine Interia . Interview for Tygodnik Interia: <i>Our Galaxy is expected to host around 150 million black holes</i> |
| June 2022 | ■ Polish Radio . Interview for Polish Radio: <i>Secrets of the black holes formation</i> . |
| Oct. 2020 | ■ Nature Research Highlights . Interview for Nature Research Highlights: <i>The odd couple: how a pair of mismatched black holes formed</i> . |
| Oct. 2020 | ■ Science in Poland . Interview for Science in Poland website: <i>Scientists explain how two black holes of hugely different masses collided</i> . |
| Sept., Nov. 2019 | ■ Warsaw, Poland . Lectures for general public organized by Nicolaus Copernicus Astronomical Center <i>Black holes in the Milky Way..</i> |

Publications

I am a co-author of 25 peer-reviewed scientific articles and the leading author of 7 of them.

ADS Public Library: <https://ui.adsabs.harvard.edu/public-libraries/UoLMUp96RQe2hPXDjU3Mcw>.

ORCID: <https://orcid.org/0000-0002-6105-6492/>.

Peer-reviewed:

First and second author

1. **Olejak A.**, Stegmann J., de Mink S. E., Valli R., Sari R., Justham S., 2025, ApJL 987 L11. *Supermassive black holes stripping a subgiant star down to its helium core: a new type of multi-messenger source for LISA*, doi:[10.3847/2041-8213/ade432](https://doi.org/10.3847/2041-8213/ade432)
2. **Olejak A.**, Klencki J., Xu X.-T., Wang C., Belczynski K., Lasota J.-P., 2024, A&A, 689, A305. *Unequal-mass highly spinning binary black hole mergers in the stable mass transfer formation channel*, doi:[10.1051/0004-6361/202450480](https://doi.org/10.1051/0004-6361/202450480).
3. **Olejak A.**, Fryer C. L., Belczynski K., Baibhav V., 2022, MNRAS, 516, 2252. *The role of supernova convection for the lower mass gap in the isolated binary formation of gravitational wave sources*, doi:[10.1093/mnras/stac2359](https://doi.org/10.1093/mnras/stac2359).
4. **Olejak A.**, Belczynski K., 2021, ApJL, 921, L2. *The Implications of High Black Hole Spins for the Origin of Binary Black Hole Mergers*, doi:[10.3847/2041-8213/ac2f48](https://doi.org/10.3847/2041-8213/ac2f48).
5. **Olejak A.**, Belczynski K., Ivanova N., 2021, A&A, 651, A100. *Impact of common envelope development criteria on the formation of LIGO/Virgo sources*, doi:[10.1051/0004-6361/202140520](https://doi.org/10.1051/0004-6361/202140520).
6. **Olejak A.**, Fishbach M., Belczynski K., Holz D. E., Lasota J.-P., Miller M. C., Bulik T., 2020, ApJL, 901, L39. *The Origin of Inequality: Isolated Formation of a 30+10 Msun Binary Black Hole Merger*, doi:[10.3847/2041-8213/abb5b5](https://doi.org/10.3847/2041-8213/abb5b5).
7. **Olejak A.**, Belczynski K., Bulik T., Sobolewska M., 2020, A&A, 638, A94. *Synthetic catalog of black holes in the Milky Way*, doi:[10.1051/0004-6361/201936557](https://doi.org/10.1051/0004-6361/201936557).
8. Stegmann J., **Olejak A.**, de Mink S. E., 2025, ApJL, 992, L26. *Resolving Black Hole Family Issues Among the Massive Ancestors of Very High-Spin Gravitational-Wave Events Like GW231123*, doi:[10.3847/2041-8213/ae0e5f](https://doi.org/10.3847/2041-8213/ae0e5f).
9. Sen K., **Olejak A.**, Banerjee S., 2025, A&A, 696, A54. *X-ray emission from helium star–black hole binaries as probes of tidally induced spin-up of second-born black holes*, doi:[10.1051/0004-6361/202553829](https://doi.org/10.1051/0004-6361/202553829).
10. Banerjee S., **Olejak A.**, Belczynski K., 2023, ApJ, 953, 80. *Symmetry Breaking in Merging Binary Black Holes from Young Massive Clusters and Isolated Binaries*, doi:[10.3847/1538-4357/acdd59](https://doi.org/10.3847/1538-4357/acdd59).
11. Romagnolo A., **Olejak A.**, Hypki A., Wiktorowicz G., Belczynski K., 2022, A&A, 667, A55. *Testing the presence of a dormant black hole inside HR 6819*, doi:[10.1051/0004-6361/202141992](https://doi.org/10.1051/0004-6361/202141992).
12. Fryer C. L., **Olejak A.**, Belczynski K., 2022, ApJ, 931, 94. *The Effect of Supernova Convection On Neutron Star and Black Hole Masses*, doi:[10.3847/1538-4357/ac6ac9](https://doi.org/10.3847/1538-4357/ac6ac9).
13. Czerny B., **Olejak A.**, Ralowski M., Kozłowski S., Martinez Aldama M. L., Zajacek M., Pych W., et al., 2019, ApJ, 880, 46. *Time Delay Measurement of Mg II Line in CTS C30.10 with SALT*, doi:[10.3847/1538-4357/ab2913](https://doi.org/10.3847/1538-4357/ab2913).

Other co-authored

1. Vigna-Gomez A., Grishin E., Stegmann J., **Olejak A.**, Popa S. A., Liu B., Rajamuthukumar A. S., et al., 2025, A&A, 699, A272. *Prompt Stellar and Binary Black Hole Mergers from Chemically Homogeneous Evolution in Triples*, doi:[10.1051/0004-6361/202554680](https://doi.org/10.1051/0004-6361/202554680)

2. Wang C., Bodensteiner J., Xu X.-T., de Mink S. E., Langer N., Laplace E., Vigna-Gómez A., et al., 2024, *ApJL*, 975, L20. *Stripped Helium Star and Compact Object Binaries in Coeval Populations: Predictions Based on Detailed Binary Evolution Models*, doi:10.3847/2041-8213/ad86b7.
3. Fumagalli G., Romero-Shaw I., Gerosa D., De Renzis V., Kritos K., Olejak A., 2024, *PhRvD*, 110, 063012. *Residual eccentricity as a systematic uncertainty on the formation channels of binary black holes*, doi:10.1103/PhysRevD.110.063012.
4. Prince R., Zajaček M., Panda S., Hryniewicz K., Kumar Jaiswal V., Czerny B., Trzcionkowski P., et al., 2023, *A&A*, 678, A189. *Wavelength-resolved reverberation mapping of intermediate-redshift quasars HE 0413-4031 and HE 0435-4312: Dissecting Mg II, optical Fe II, and UV Fe II emission regions*, doi:10.1051/0004-6361/202346738.
5. Leveque A., Giersz M., Askar A., Arca-Sedda M., Olejak A., 2023, *MNRAS*, 520, 2593. *MOCCA-Survey Database: extra galactic globular clusters - III. The population of black holes in Milky Way and Andromeda-like galaxies*, doi:10.1093/mnras/stad240.
6. Prince R., Zajaček M., Czerny B., Trzcionkowski P., Bronikowski M., Sobrino Figaredo C., Panda S., et al., 2022, *A&A*, 667, A42. *Wavelength-resolved reverberation mapping of quasar CTS C30.10: Dissecting Mg II and Fe II emission regions*, doi:10.1051/0004-6361/202243194.
7. Wang Y., Liao S., Giacobbo N., Olejak A., Gao J., Liu J., 2022, *A&A*, 665, A111. *Astrometric mass measurement of compact companions in binary systems with Gaia*, doi:10.1051/0004-6361/202243684.
8. Belczynski K., Doctor Z., Zevin M., Olejak A., Banerje S., Chattopadhyay D., 2022, *ApJ*, 935, 126. *Black Hole-Black Hole Total Merger Mass and the Origin of LIGO/Virgo Sources*, doi:10.3847/1538-4357/ac8167.
9. Belczynski K., Romagnolo A., Olejak A., Klencki J., Chattopadhyay D., Stevenson S., Coleman Miller M., et al., 2022, *ApJ*, 925, 69. *The Uncertain Future of Massive Binaries Obscures the Origin of LIGO/Virgo Sources*, doi:10.3847/1538-4357/ac375a.
10. Zajaček M., Czerny B., Martinez-Aldama M. L., Rałowski M., Olejak A., Przyłuski R., Panda S., et al., 2021, *ApJ*, 912, 10. *Time Delay of Mg II Emission Response for the Luminous Quasar HE 0435-4312: toward Application of the High-accretor Radius-Luminosity Relation in Cosmology*, doi:10.3847/1538-4357/abe9b2.
11. Zajaček M., Czerny B., Martinez-Aldama M. L., Rałowski M., Olejak A., Panda S., Hryniewicz K., et al., 2020, *ApJ*, 896, 146. *Time-delay Measurement of Mg II Broad-line Response for the Highly Accreting Quasar HE 0413-4031: Implications for the Mg II-based Radius-Luminosity Relation*, doi:10.3847/1538-4357/ab94ae.
12. Belczynski K., Klencki J., Fields C. E., Olejak A., Berti E., Meynet G., Fryer C. L., et al., 2020, *A&A*, 636, A104. *Evolutionary roads leading to low effective spins, high black hole masses, and O1/O2 rates for LIGO/Virgo binary black holes*, doi:10.1051/0004-6361/201936528.

Other submitted

1. Olejak A., Klencki J., Vigna-Gomez A., de Mink S. E., van Son L., Stegmann J., Ryu T., et al., 2025, *Widening of Binaries via Non-conservative Mass Transfer as a Formation Channel for Gaia Black Hole System*, doi:10.48550/arXiv.2511.10728
2. Stegmann J., Antonini F., Olejak A., Biscoveanu S., Raymond V., Rinaldi S., Flanagan B., 2025, *n-plane Black-hole Spin Measurements Suggest Most Gravitational-wave Mergers Form in Triples*, doi:10.48550/arXiv.2512.15873
3. Zdziarski A. A., Marcel G., Veledina A., Olejak A., Lancova D., 2025, *Spins of Black Holes in X-ray Binaries and the Tension with the Gravitational Wave Measurements*, (accepted for publication in New Astronomy Review) doi:10.48550/arXiv.2506.00623
4. Wiktorowicz G., Middleton M., Olejak A., Dashwood-Brown C., Ward M.-M., Ingram A., 2025, *Self-lensing binaries as probes of Supernova physics*, doi:10.48550/arXiv.2509.11726

5. Klencki J., Podsiadlowski P., Langer N., **Olejak A.**, Justham S., Vigna-Gómez A., de Mink S. E., 2025, *A fundamental limit to how close binary systems can get via stable mass transfer shapes the properties of binary black hole mergers* doi:10.48550/arXiv.2505.0886
6. Banerjee S., **Olejak A.**, 2024. *On the effective spin-mass ratio $\chi_{\text{eff}} - q$ relation of binary black hole mergers that evolved in isolation* doi:10.48550/arXiv.2411.15112
7. Belczynski K., Bulik T., **Olejak A.**, Chruslinska M., Singh N., Pol N., Zdunik L., et al., 2018. *Binary neutron star formation and the origin of GW170817*, doi:10.48550/arXiv.1812.10065.