Alessandro **Santini**

PhD candidate in Gravitational Physics

Potsdam Science Park, Am Mühlenberg 1, D-14476 Potsdam, Germany

+49 331 567-7240 | alessandro.santini@aei.mpg.de | asantini29 | asantini29 | 0000-0001-6936-8581

Education

Ph.D. in Physics — *Potsdam, Germany*

Max Planck Institute for Gravitational Physics — *2023–present*

- **Supervisors:** Dr. Jonathan Gair, Prof. Dr. Alessandra Buonanno

Master's Degree in Astrophysics and Space Physics — *Milan (MI), Italy*

Università degli studi di Milano-Bicocca — *2021–2023*

- **final degree grade:** 110/110 with distinction (cum laude)
- **Thesis:** Black-hole mergers in disk-like environments could explain the observed $q - \chi_{\rm eff}$ correlation
- **Thesis advisors:** Prof. Davide Gerosa, Dr. Roberto Cotesta

Bachelor's Degree in Physics — *Milan (MI), Italy*

Università degli studi di Milano-Bicocca — *2018–2021*

- **final degree grade:** 110/110 with distinction (cum laude)
- **Thesis:** Resolution of the Euler equations using the Athena++ code
- **Thesis advisor:** Prof. Bruno Giacomazzo

High School Diploma — *Lissone (MB), Italy*

Liceo Scientifico Statale Federigo Enriques — *2013–2018*

- **Final degree grade:** 97/100

Internships

Erasmus+ Scholarship — *Baltimore (MD), USA*

Johns Hopkins University — *April–July 2023*

Skills

Programming Python (proficient) – GPU computing – Bash – Mathematica, C, C++ (basic)

Other tools Latex (proficient), Git, Microsoft Office suite

Languages Italian (Native), English (Fluent)

Publication record

1. **Santini, A.**; Muratore, M; and Gair, J.; Hartwig, O.
   "A flexible, GPU-accelerated approach for the joint characterization of LISA instrumental noise and Stochastic Gravitational Wave Backgrounds", ArXiv preprint
2. Chapman-Bird, C. E. A. et al (including **Santini, A.**)
   "The Fast and the Frame-Dragging: Efficient waveforms for asymmetric-mass eccentric equatorial inspirals into rapidly-spinning black holes", ArXiv preprint
3. Fabbri, C. M.; Gerosa, D.; **Santini, A.**; Mould, M.; Toubiana, A.; Gair, J.
   "Reconstructing parametric gravitational-wave population fits from nonparametric results without refitting the data", Phys.Rev.D 111, 104053

4. Khalvati, H.; **Santini, A.**; Duque, F.; Speri, L.; Gair, J.; Yang, H.; Brito, R.
   "Impact of relativistic waveforms in LISA's science objectives with extreme-mass-ratio inspirals", Phys.Rev.D 111, 082010

5. **Santini, A.**; Gerosa, D.; Cotesta, R.; Berti, E.
   "Black-hole mergers in disklike environments could explain the observed $q - \chi_{\rm eff}$ correlation", Phys. Rev. D 108, 083033

Talks, conferences & workshops

Contributed Talks

EMRI Search and Inference within the LISA Global Fit - Part I — *Paris, France*

Don't reinvent the wheel: including Extreme Mass Ratio Inspirals in the LISA global fit — *June 2025*

Amaldi15 — *Online*

Black-hole mergers in disk-like environments could explain the observed $q - \chi_{\rm eff}$ correlation — *July 2023*

APS April Meeting — *Minneapolis, USA*

Migration traps in AGN disks and hierarchical mergers as promising origin of the observed $q - \chi_{\rm eff}$ correlation — *April 2023*

Contributed Posters

15th LISA Symposium — *Dublin, Ireland*

A flexible approach for the joint characterization of LISA instrumental noise and Stochastic Gravitational-Wave Backgrounds — *July 2024*

Public Outreach

Berlin Science Week — *Berlin, Germany*

Deciphering black hole symphonies: The new world of gravitational wave astronomy. — *November 2024*

Speaker at one of the highlight, invited events of Berlin Science Week 2024 (webpage here), presenting the current status of gravitational-wave astronomy together with 7 other researchers from the Max Planck Institute for Gravitational Physics. Audience: > 200 people.