

Dogan Akpinar

Curriculum Vitae

Summary

I am a theoretical physicist with over three years of research experience spanning high-energy physics and general relativity. My work focuses on the analytical description of compact binary systems by combining modern particle-physics techniques—particularly scattering amplitudes and effective field theory—with methods from classical general relativity, such as the self-force expansion. In particular, I am interested in understanding how spin and finite-size effects modify black-hole scattering and compact-binary dynamics, as well as hidden symmetries and integrable structures that may provide deeper insight into the properties of Kerr black holes. My broader aim is to develop systematic methods for deriving precise classical gravitational observables from scattering amplitudes and to connect these results with complementary descriptions of compact-binary dynamics across different mass-ratio regimes.

Academic Appointments

- 2026–2026 **Postdoctoral Research Fellow**, *Plymouth University*, Plymouth.
2026–2026 **Postdoctoral Research Associate**, *University of Edinburgh*, Edinburgh.

Education

- 2022–2026 **PhD in Theoretical Particle Physics**, *University of Edinburgh*, Edinburgh.
PhD Thesis: “An Amplitudes Approach to Spinning Black Hole Scattering”
Advisor: Dr. Mao Zeng
- 2018–2022 **Master of Science in Physics with Theoretical Physics**, *Imperial College London*, London, **First Class Honours**.
Master Thesis: “Bosonic String Theory, Geometries, and T-duality”
Advisor: Prof. Daniel Waldram

Publication List

My full publication list is available at [Dogan Akpinar INSPIRE HEP profile](#) (). I have 6 papers (5 of which are published in world-renowned journals such as *Journal of High Energy Physics*, *Physical Review D*, and *Physical Review Letters*), with a total of 115 citations (as of the 13th of July 2026) and a h -index of 5.

- [1] **D. Akpinar**, *K. Aoki*, *A. Cristofoli*, *H. Jeong*, *K. Yoshimura*, “Black Hole Thermodynamics Meets On-Shell Amplitudes: Local Detailed Balance and Thermal Spectrum from Spin Universality and Unitarity”, [arXiv:2606.13599](#) [[hep-th](#)].
- [2] **D. Akpinar**, “Scattering Gravitons off General Spinning Compact Objects to $\mathcal{O}(G^2 S^4)$ ”, *Phys. Rev. D.* 113 no. 4 (2026), p. 045003, [arXiv:2511.10280](#) [[hep-th](#)] (*Editor’s Suggestion*).

- [3] **D. Akpinar**, *G. R. Brown, R. Gonzo, and M. Zeng*, "Unexpected Symmetries of Kerr Black Hole Scattering", *Phys. Rev. D.* 113.10 (2026), p. L101501 [arXiv:2508.10761 \[hep-th\]](#) (Accepted to PRD Letters).
- [4] **D. Akpinar**, *V. D. Duca, and R. Gonzo*, "The spinning self-force EFT: 1SF waveform recursion and Compton scattering", *Phys. Rev. D.* 112 no. 8 (2025), p. 084014, [arXiv:2504.02025 \[hep-th\]](#) (Editor's Suggestion).
- [5] **D. Akpinar**, *F. Febres Cordero, M. Kraus, A. Smirnov, and M. Zeng*, "First Look at Quartic-in-Spin Binary Dynamics at Third Post-Minkowskian Order", *Phys. Rev. Lett.* 135 no. 4 (2025), p. 041602, [arXiv:2502.08961 \[hep-th\]](#).
- [6] **D. Akpinar**, *F. Febres Cordero, M. Kraus, M. S. Ruf, and M. Zeng*, "Spinning Black Hole Scattering at $\mathcal{O}(G^3S^2)$: Casimir Terms, Radial Action and Hidden Symmetry", *JHEP* 03 (2025), p. 126, [arXiv:2407.19005 \[hep-th\]](#).

Conference, Workshops, and Invited Seminars

- 17-04-2026 **Conference**, *Amplitudes, Strong-Field Gravity and Resummation, Nordita*, "Kerr Black Hole Scattering: An On-Shell Approach to Conserved Quantities and Integrability".
- 13-02-2026 **WQFT Seminar**, *Humboldt University of Berlin, Berlin*, "Precision Kerr Black Hole Dynamics from Scattering Amplitudes".
- 11-02-2026 **HEP-TH Seminar**, *Humboldt University of Berlin, Berlin*, "An On-Shell Approach to Symmetries and Integrability for Kerr Black Hole Scattering".
- 20-01-2026 **Conference**, *JGRG34: The 34th workshop on General Relativity and Gravitation*, Yukawa Institute for Theoretical Physics, Kyoto, "An On-Shell Approach to Symmetries and Integrability for Kerr Black Hole Scattering".
- 15-01-2026 **Seminar**, *RIKEN Center for Interdisciplinary Theoretical and Mathematical Sciences, Saitama*, "Classical Spinning Black Hole Scattering from Quantum Amplitudes".
- 03-12-2025 **Seminar**, *Florida State University, Tallahassee*, "Precision Frontiers in Spinning Black Hole Scattering".
- 03-12-2025 **Seminar**, *University of California, Los Angeles*, "Unexpected Symmetries of Kerr Black Hole Scattering".
- 11-12-2025 **Conference (online)**, *Loop-the-Loop-2: Feynman calculus and its applications to gravity and particle physics*, "High Precision Kerr Black Hole Scattering".
- 15-07-2025 **Seminar**, *University of Tokyo, Tokyo*, "Spinning Black Hole Scattering and Asymptotic Integrability".
- 05-06-2025 **Astrophysics Seminar**, *Yukawa Institute for Theoretical Physics, Kyoto*, "Effective Field Theory for Spinning Extreme Mass Ratios".
- 28-04-2025 **Amplitudes Lounge Seminar (online)**, *University of Padova, Padova*, "Quartic-in-Spin Black Hole Scattering at 3PM".
- 15-04-2025 **Theory Seminar**, *Queen Mary University of London, London*, "Quartic-in-Spin Black Hole Scattering at 3PM".

- 30-09-2024 **General Relativity from AMplitudes Alliance (GRAMPA) Seminar (online)**, *As part of an online seminar for young theoretical physicists worldwide, "Spinning Black Hole Scattering at $O(G^3)$ using Fixed Spin Theories".*
- 26-09-2024 **Amplitudes Meeting**, *University of Edinburgh, Edinburgh, " Spinning Black Hole Scattering at $O(G^3)$ using Fixed Spin Theories".*

Teaching

- 2022–2026 **Teaching Assistant**, *University of Edinburgh, Edinburgh.*
- Linear Algebra and Severable Variable Calculus (Pre-Honours)
 - Computer Simulation (Pre-Honours)
 - Lagrangian Dynamics (Junior Honours)
 - Electromagnetism and Relativity (Junior Honours)
 - General Relativity (Senior Honours/Masters)
 - Quantum Field Theory (Senior honours/Masters)

Scholarships and Awards

- 2022–2026 **STFC PhD Research Studentship**, *University of Edinburgh, Edinburgh.*
- 2022 **Dean's List**, *Top 10% of the cohort, Imperial College London, London.*

Personal Details, Skills, and Interests

Citizenship: *British.*

Programming: Mathematica, Python, and $\LaTeX$.

Languages:

- English (Fluent): Native speaker
- Portuguese (Fluent): Mother tongue
- Japanese (Basic): Completed Japanese Level 1 and 2 at Imperial College London

Referees

- 1) Mao Zeng (mao.zeng@ed.ac.uk): Research Fellow, University of Edinburgh
- 2) Fernando Febres Cordero (ffebres@hep.fsu.edu): Professor of Theoretical Physics, Florida State University
- 3) Vittorio Del Duca (Vittorio.Del.Duca@cern.ch): Professor of Theoretical Physics, INFN Laboratori Nazionali di Frascati