Philip K. Schwartz

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Research interests

Mathematical physics and differential geometry, specifically in general relativity and modified theories of gravity. Degenerate metric geometry, geometric description of Newtonian limits. Quantum systems under gravity.

Academic employment

SINCE OCT 2020	Leibniz University Hannover Postdoctoral researcher (Wissenschaftlicher Mitarbeiter)
Aug 2016–Sep 2020	Leibniz University Hannover Doctoral researcher (Wissenschaftlicher Mitarbeiter)

Education

2016–2020	LEIBNIZ UNIVERSITY HANNOVER Doctoral Studies
Sep 2020	Member of CRC 1227 Designed Quantum States of Matter (DQ-mat) Dr rer nat in Physics Thesis: <i>Post-Newtonian Description of Quantum Systems in Gravitational Fields</i>
	Advisor: Domenico Giulini Mark: <i>summa cum laude</i>
2015-2016	UNIVERSITY OF CAMBRIDGE and TRINITY COLLEGE CAMBRIDGE
Jun 2016	Part III of the Mathematical Tripos Master of Advanced Study (MASt) in Applied Mathematics Mark: <i>Distinction</i>
2011-2015	Leibniz University Hannover
Nov 2014	Studies of Physics and Mathematics Bachelor of Science (BSc) in Physics Mark: 1,0 (very good)

Scholarships, prizes and awards

2024	WILHELM AND ELSE HERAEUS FOUNDATION Funding of participation in the 73 rd Lindau Nobel Laureate Meeting
2022	LEIBNIZ UNIVERSITY HANNOVER, FACULTY OF MATHEMATICS AND PHYSICS Wilhelm und Else Heraeus Young Physicists Award (Doctoral thesis award)
2022	LEIBNIZ UNIVERSITY HANNOVER, FACULTY OF MATHEMATICS AND PHYSICS <i>Prize for the best teaching</i>
2016	TRINITY COLLEGE CAMBRIDGE <i>Examination Prize</i> for excellent performance; Elected to a <i>Senior Scholarship</i>
2015–2016	TRINITY COLLEGE CAMBRIDGE Trinity Studentship in Mathematics
2015	Leibniz University Hannover <i>Preis des Präsidiums</i> for outstanding academic achievements
2014–2016	German Academic Scholarship Foundation Scholarship

Nov 2024	<i>Geometric descriptions of (post-)Newtonian modified gravity,</i> Research group Geometric Analysis, Differential Geometry, and Relativity Theory, University of Tübingen
Apr 2024	Teleparallel Newton–Cartan gravity, MPI for Mathematics Bonn
Mar 2023	<i>Time in Newtonian physics from a spacetime perspective,</i> 781^{st} we Heraeus Seminar, Bad Honnef
Nov 2022	<i>Coupling quantum matter to gravity: a systematic post-Newtonian approach,</i> Vienna Central European Seminar on Particle Physics and Quantum Field Theory 2022, Vienna
Nov 2021	<i>Post-Newtonian Hamiltonian description of quantum systems under gravity,</i> Seminar series on relativistic effects in atomic clocks, Boulder–Innsbruck–Hannover (virtual)

Academic teaching

Summer 2022, 2023	Lecture Modern developments in Newton–Cartan gravity
Winter 2021/22, 2022/23, 2024/25	Lecture (Introduction to) Newton–Cartan gravity
SUMMER 2021, 2024	Repetitoria Theoretical Electrodynamics, Theoretical Physics в
Winter 2020/21, 2023/24	Repetitoria Mathematical Methods of Physics, Theoretical Physics A
2017-2025	Assistant for several courses and seminars
2012-2015	Student teaching assistant at Leibniz University Hannover for several courses

Student supervision and grading

2022-2024	Co-supervision of a Master's project with D Giulini: A L von Blanckenburg, <i>Variational completion of Newton–Cartan gravity</i>
2021-2022	Co-supervision of a Master's project with D Giulini: A Alibabaei, <i>Geometric post-Newtonian description of spin-half particles in curved spacetime</i>
2021, 2022	2 nd referee for Bachelor's theses in physics teaching degree programme

Voluntary activities for the Club der Ehemaligen der Deutschen Schüler-Akademien E. V. (alumni organisation of the *Deutsche SchülerAkademien*)

SINCE 2023	Finanzvorstand
SUMMER 2022	Course Differential Forms and basics of Symplectic Geometry
Summer 2019	Course Introduction to General Relativity
Winter 2018/19	Course Introduction to Differential Geometry (joint with B Haake)
SUMMER 2018	Course Stories of Alice and Bob—an introduction to Quantum Mechanics
2017-2018	Concept development and organisation of the MusikAkademie 2018
Summer 2014	Course Introduction to pure Mathematics (joint with J Haferkamp)

Music

SINCE 2023	Member of the vocal quintet ENSEMBLE SOZUSINGEN
SINCE 2018	Member of the Synagogalchor Hannover
SINCE 2018	Member of the Junger Kammerchor Braunschweig
2017-2023	Member of the Landesjugendchor Niedersachsen (Lower Saxony youth choir)
2011-2022	Member of the Choir of Leibniz University Hannover
SINCE 2003	Member of the Knabenchor Hannover (Hannover boys' choir)