

# RICARDO A S KARAM

---

Associate Professor  
Department of Science Education  
Faculty of Science  
University of Copenhagen

NBB, Universitetsparken 5  
2100 Copenhagen, Denmark  
ricardo.karam@ind.ku.dk  
<https://ricardoaskaram.com/>

## CAREER SUMMARY AND HIGHLIGHTS

---

- Author of more than 50 peer-reviewed papers in science/physics education journals
- Contract with Princeton University Press to write a book about the history of complex numbers in physics
- More than 30 invited talks, including at [GIREP](#) and [APS](#) conferences
- Visiting scholar in more than 10 countries
- 25 years of teaching experience (physics and mathematics, high school and university)
- PhD in Physics Education, University of São Paulo (USP) and TU Dresden (2008-2011)
- Postdoctoral Humboldt fellow, University of Hamburg, Helsinki and TU Dresden (2012-2014)
- Supervision of 10 MSc students, 3 PhD students and 2 postdocs
- Pedagogical supervision of more than 30 physics staff members at the Niels Bohr Institute
- Head of the research group in Didactics of Physics, University of Copenhagen (2015-2022)
- Member of the International Scientific Committee of IHPST, GIREP and WCPE conferences
- Reviewer for the journals PR-PER, AJP, EJP, TPT, Sci. & Ed., RBEF, CBEF, EJMSTE and IJRUME
- Responsible for the History of Physics and of Quantum Mechanics courses at UCPH
- Director of the [IHPST](#) council (2015-2019)
- Guest editor of a [thematic issue](#) for the journal *Science & Education*
- Member of the Editorial Board of the journal *Science & Education* (2015-pres.)

## EDUCATION

---

University of São Paulo & TU Dresden	2008-2012	PhD	Physics Education
Federal University of Santa Catarina	2004-2005	MSc	Physics Education
PUC-PR	2000-2003	BSc	Mathematics & Physics
Federal University of Paraná	1997-2002	BSc	Civil Engineering

## EMPLOYMENT

---

2014 - present	Associate Professor, Department of Science Education, University of Copenhagen
2012 - 2014	Postdoctoral fellow, Humboldt foundation, Universities of Hamburg, Dresden and Helsinki
2007 - 2009	Associate Professor of Mathematics (tenured), Federal Institute of Santa Catarina (IFSC)
2004 - 2006	Assistant Professor of Physics, Federal University of Santa Catarina (UFSC)
2000 - 2004	Mathematics and Physics high school teacher, Dom Bosco school

## INVITED TALKS (SELECTED)

---

- Invited speaker at the [APS Global Physics Summit 2026](#), Denver, USA.
- Opening keynote lecture at the [GIREP-EPEC 2025](#), Leiden, The Netherlands.
- Panelist at the symposium [Revisiting the History of Quantum Physics](#), Berlin, Germany.
- Talk at the [50<sup>th</sup> anniversary](#) of the Mathematics Education Department of Cinvestav, Mexico.
- Symposium [Complex Numbers in Quantum Theory](#), PSA 2024 conference, New Orleans, USA.
- Talk at the [Workshop on the History of Quantum Mechanics](#), Bad Honnef, Germany.
- Plenary panel member at the [INDRUM 2024](#) conference, Barcelona, Spain.
- Talk at the seminar series from the [Southern California Philosophy of Physics](#) group.
- Talk at the conference [History for Physics – Quantum foundations](#). Available on [YouTube](#).

## SELECTED PUBLICATIONS

---

- Rangkuti, M. A., & Karam, R. (2023). Encouraging students to understand the 1D wave equation. *Phys. Rev. PER*, 19. <https://doi.org/10.1103/PhysRevPhysEducRes.19.020161>
- Karam, R., & Lima, N. (2022). Using history of physics to teach physics? *Connecting Research in Physics Education with Teacher Education* v. 3, p. 22-38. <https://doi.org/10.5281/zenodo.5792968>
- Karam, R. (2020). Schrödinger's original struggles with a complex wave function. *American Journal of Physics*, 88(6), 433–438. Featured. <https://doi.org/10.1119/10.0000852>
- Karam, R. (2020). Why are complex numbers needed in quantum mechanics? Some answers for the introductory level. *American Journal of Physics*, 88(1), 39–45. <https://doi.org/10.1119/10.0000258>
- Karam, R., Uhden, O., & Höttecke, D. (2019). The “math as prerequisite” illusion: Historical considerations and implications for physics teaching. In *Mathematics in physics education* p. 37–52. Springer International Publishing. [https://doi.org/10.1007/978-3-030-04627-9\\_2](https://doi.org/10.1007/978-3-030-04627-9_2)
- Karam, R. (2019). O que diferencia as Feynman lectures de livros tradicionais? *Revista Brasileira de Ensino de Física*, 40(4), 1-11. <https://doi.org/10.1590/1806-9126-RBEF-2018-0071>
- Karam, R. (2015). Introduction of the thematic issue on the interplay of physics and mathematics. *Science & Education*, 24(5), 487–494. <https://doi.org/10.1007/s11191-015-9763-9>
- Karam, R., & Krey, O. (2015). Quod erat demonstrandum: Understanding and explaining equations in physics teacher education. *Science & Education*, 24(5), 661–698. <https://doi.org/10.1007/s11191-015-9743-0>
- Karam, R. (2014). Framing the structural role of mathematics in physics lectures: A case study on electromagnetism. *Phys. Rev. PER*, 10 <https://doi.org/10.1103/PhysRevSTPER.10.010119>
- Uhden, O.\*, Karam, R.\*, Pospiech, G., & Pietrocola, M. (2012). Modelling mathematical reasoning in physics education. *Science & Education*, 20(4), 485–506. \* Both authors contributed equally. <https://doi.org/10.1007/s11191-011-9396-6>

## COURSES TAUGHT (SELECTED)

---

- 2022-2023: [Philosophy of Science and Ethics for Physicists](#). Taught to undergraduate physics students.
- 2020-2022: [History of Quantum Mechanics](#). Taught with Christian Joas and Helge Kragh.
- 2017-2020: [History of Physics](#). Taught with Helge Kragh. Materials available [here](#).
- 2017-2019: [Fundamentals of the Didactics of Science and Mathematics](#). Taught to pre-service physics teachers.
- 2015-2025: [Introduction to University Pedagogy](#). Course taught to PhD students at the Faculty of Science.
- 2007-2009: Calculus, Statistics, and Linear Algebra at IFSC
- 2004-2007: Mechanics, Thermodynamics, Electromagnetism, and Quantum Mechanics at UFSC and UDESC

## SELECTED GRANTS

---

- ERASMUS + Teaching mobility grant. University of Sydney (2025)
- VELUX visiting professor for Andrea diSessa (2015)
- Postdoctoral Fellow of the Humboldt Foundation (2012-2014)

## ACADEMIC SERVICE

---

- Director of the [IHPST](#) council, 2015-2019
- Member of the Editorial Board of the journal [Science & Education](#), 2015-pres.
- Leader of the research group on Didactics of Physics, Department of Science Education, 2015-2022
- Editor of the [thematic issue](#) *The Interplay of Physics and Mathematics* for the journal *Science & Education*
- Editor of the [thematic issue](#) *Mathematik im Physikunterricht* for the journal *Unterricht Physik*
- Member of the International Scientific Committee of IHPST, GIREP and WCPE conferences
- Reviewer for the journals *PR-PER*, *AJP*, *EJP*, *Science & Education*, *RBEF* and *EJMSTE*