

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/>

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	Assistant Professor of Mathematics, 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

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

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>

INVITED TALKS (SELECTED)

- 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 [50th 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](#).

COURSES TAUGHT AT UCPH

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.

RESEARCH STAYS (SELECTED)

4/2025: University of Bologna, Department of Physics and Astronomy. Hosted by [Olivia Levini](#).

2/2025: University of Sydney, School of Physics. Hosted by [Manjula Sharma](#). Funded by ERASMUS+

11/2022: UC San Diego, Department of Philosophy. Hosted by [Craig Callender](#).

4/2017: Stockholm University, Department of Mathematics and Science Education. Funded by ERASMUS+

3-5/2013: University of Helsinki, Physics Department. Hosted by [Ismo Koponen](#).

4/2011: University of Maryland, Physics Department. Hosted by [Joe Redish](#).

SELECTED GRANTS

- ERASMUS + Teaching mobility grant. University of Sydney (2025)
- ERASMUS + Teaching mobility grant. University of Stockholm (2017)
- VELUX visiting professor for Andrea diSessa (2015)
- Postdoctoral Fellow of the Humboldt Foundation (2012-2014)
- PhD grant from FAPESP (2011-2012) and CAPES-DAAD (2010-2011)

ACADEMIC SERVICE

- Faculty board member, Department of Science Education, 2024-2025
- 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*

LANGUAGE SKILLS

- Portuguese: First language
- English: Excellent speaking, reading and writing (TOEFL 570 in 1994)
- German: Excellent speaking, reading and writing (DSH 2 in 2010)
- Danish: Excellent speaking, reading and writing (PD3 10 in 2019)
- Spanish: Good speaking, good reading and regular writing