

## CURRICULUM VITAE



Aron Jonathan  
Beekman PhD  
researcher

### personal

born 21 November 1979

married

2 children

nationality Dutch

### contact

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### language proficiency

Dutch *native*

English *fluent*

Japanese *conversational*

Frans *intermediate*

Duits *intermediate*

### programming

#### scientific

Mathematica, SciPy, Sage

#### general

Python, Django, SQL, PHP,  
HTML, CSS

## Career target

After a deep and fruitful dive into theoretical fundamental physics, I am now eager to contribute to society more directly. Project-oriented research or consultancy in energy transition, sustainability or related areas. As part of a diverse team where I can provide sharp analytical thinking, broad interests and international experience. Through competitive sports and fundamental research I know how to set goals and determine what is necessary to achieve them. I aim to build expertise in new, relevant fields, and in the longer term take project responsibility.

## Key qualities

**analytical skills** quickly assess data and formulate the right questions

**responsibility** conceived and led research and software projects

**broad interests** active in science, sports, events, cooking and more

**goal oriented** in team & endurance sports and complex research problems

**eager to learn** a permanent urge for new knowledge

**team leader and player** in event organization, sports and research groups

## Experience

2020– **Scientific software developer** freelance

*Project:* Designed and implemented Django database for SciPost Foundation's *extended research metadata facilities*.

*Activities:* Surveyed and documented existing metadata repositories. Database model design. Optimization for meticulous source tracking. *Entity-Relationship* visualization. Provided biweekly feedback and advice to client.

2012–2020 **Post-doctoral researcher**

2015–2020 Keio University, Japan

Work in the five-year *Topological Science* project headed by Muneto Nitta.

*Principal results:*

- first author monograph on dual gauge field theory of quantum liquid crystals, by now regarded as standard reference

- project lead and first author overview/introduction spontaneous symmetry breaking, published as *lecture notes* for graduate students

2015 National Institute for Material Science, Japan

Initiating collaboration on quantum liquid crystals

2012–2015 RIKEN Center for Emergent Matter Science, Japan

Awarded "RIKEN Foreign Postdoctoral Researcher" fellowship.

*Principal results:*

- pioneering study on magnon-skyrmion scattering

- dynamical understanding absence of rotational Goldstone modes in solids

*Activities:* set up and carry out personal research program — establish (international) collaborations — write research grant proposal — manage multiyear research grant — present at and participate in (inter)national conferences — write academic journal articles — present at and participate in group seminars — participate in weekly meetings with experimentalists — theoretical advice to experimentalists — organisation interdisciplinary workshops — lead and organization *journal club* — organization local events

2006–2011 **PhD student** theoretical physics FOM/Leiden University

*Topic:* Initial research problem turned out to be too ambitious, and after two years I decided to focus on the *vortex duality* in superfluids and superconductors. Hereby I predicted the existence of a new superconducting phase of matter, characterized by vortex lines of quantized electric current.

*Activities:* independently set up and carry out research program — mathematical and physical calculations (path integrals, group and representation theory) — scientific programming — write academic journal articles — digital drawing of graphs and visualizations — local and international collaboration — read academic literature — participate in (inter)national research schools — oral and poster presentations at conferences — participate in physics and interdisciplinary seminars — teaching assistant

*Dissertation:* *Vortex duality in higher dimensions*. Advisor: Jan Zaanen.

## Education

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- 1999–2005 **MSc** theoretical physics University of Amsterdam  
Two-year research project at Institute for Theoretical Physics on applications of Hopf algebras on gauge field theory, including mathematics courses on knot theory and category theory.  
*Thesis: Quantum double symmetries of the even dihedral groups and their breaking.*  
Advisor: Sander Bais.
- 1998–1999 **Beta/gamma Propedeuse** University of Amsterdam
- 1991–1997 **VWO high school diploma** Coornhert Gymnasium Gouda

## Courses (selected)

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- 2009 **Business Orientation Week** FOM / Nyenrode University
- 2007 **The Art of Presenting Science** FOM

## Extracurricular activities

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- 2017 **organizer** Topological Science Workshop  
~50 participants international workshop — in charge of speaker invitations and accommodations — session chairing
- 2012–2015 **organizer** RIKEN Discovery Evenings  
quarterly interdisciplinary scientific meetings for 40–80 young researchers in Tokyo, Yokohama and Kobe — general organization and session chairing
- 2011 **organizer** *Amstelbeker* rowing race  
permit acquisition — contact with local authorities — time registration
- 2007–2011 **PhD council** Dutch Research School for Theoretical Physics  
PhD students' representative — organizer annual *PhD Day* science meetings
- 2007–2012 **board member** Amsterdam Rowing Association  
umbrella of ~30 clubs — in charge of *Amsterdam affairs* — external relations with local authorities — boathouse rental
- 2001–2005 **organizer** Dutch Indoor Rowing Championships  
annual 1000+ competitors single-day event — race management & time registration — 2004-2005: lead organizer — 2004: European Championships
- 2000–2012 **IT committee** Nereus  
project lead for: new custom members database — new website — digitizing victories history — custom members' forum and photo albums
- 1998–2012 **member student rowing club** Nereus Amsterdam  
race rowing — many committees, volunteer work — 2009: membership of merit
- 1998 **Kibbutz** Hazorea, Israel  
5 months — volunteer work (kitchen, fishery) — Hebrew classes

## Leisure and personal interests

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### Sports

- 1998–2004 **lightweight race rowing**  
2000 National Champion under 23 LM2- — 2001 National Student Champion LM8+ — 20 (inter)national victories
- 2004–2006 **coach lightweight race rowing**  
2nd–4th year rowers — 18 national victories
- 2010, 2011 **winner Paul Veenemans Prijs**  
two-day competition involving speed skating, cycling, running and rowing
- 2001– **road cycling**  
leisure, cyclosporives and amateur competitions — member Tokyo Cycling Club
- others skiing — speed skating — running — mountain hiking

### Cooking

- 2008–2012 ran a cooking club — weblog — featured in *Viva* magazine
- interests Japanese cuisine — fermentation — bread baking

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