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## Laser-generated toroidal helium plasmas

Kooij, V.L.

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**Author:** Kooij, V.L.

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# Curriculum Vitae

Vincent Kooij

## Education

### Leiden University

Doctor of Philosophy (PhD), Experimental Physics  
2015 – 2020 | Leiden, The Netherlands

### Leiden University

Master of Science (MSc), Theoretical Physics, cum laude  
1998 – 2003 | Leiden, The Netherlands

### Institute for Advanced Electronics Rens & Rens

Ingenieursdiploma, Electronic Engineering, cum laude  
1992 – 1997 | Hilversum, The Netherlands

### Technical Secondary School Dominicus Savio

Secondary education, Electro-technical  
1988 – 1992 | Amsterdam, The Netherlands

## Corporate and academic experience

### Founder and Principal

Silicon Research  
December 1997 – Present | Amsterdam, The Netherlands

Founded a management and engineering consultancy specialising in bespoke solutions for the renewable energy, environmental, automotive, and other specialist industries requiring highly innovative products and services. Clients include governmental organisations in the Caribbean and the Netherlands, as well as corporations in the broadcasting services and maritime sector.

### Doctoral Researcher

Huygens-Kamerlingh Onnes Laboratory (Leiden University)  
July 2015 – October 2020 | Leiden, The Netherlands

Worked towards a PhD in experimental physics in the group of Spinoza laureate prof. dr. Dirk Bouwmeester. Studied laser-generated toroidal

*Corporate and  
academic experience  
(cont.)*

helium plasmas, as part of a larger study on self-organising knotted magnetic structures in plasma, which may find their application in nuclear fusion and astrophysical research.

Served as a teaching assistant for the quantum mechanics lecture series for four consecutive years.

Dissertation: Laser-generated toroidal helium plasmas.

Supervisors: prof. dr. D. Bouwmeester and dr. M. de Dood.

### **Interim Plant Manager**

ContourGlobal

*July 2010 – March 2014 | Bonaire, Netherlands Antilles*

Provided operational and technical leadership to the \$56 million hybrid wind diesel power plant, with full day-to-day responsibility for its \$20 million annual operations, first at Ecopower Bonaire, and after its acquisition in 2013, at ContourGlobal Bonaire. Led the commissioning of the hybrid wind diesel power plant in 2010. Recovered the plant from a near bankruptcy. Participated in the arbitration against the government-owned distribution company over a tariff dispute. Award granted on all material grounds, thereby transforming the power plant into a profitable and reliable business. Participated in the successful share transfer to ContourGlobal in 2013.

### **Research Student**

University of Oxford (Merton College and Dept. of Theoretical Physics)

*September 2002 – February 2003 | Oxford, United Kingdom*

Thesis: Emergent gravity from strongly correlated quantum systems.

Supervisors: prof. dr. J.J. Binney FRS and dr. S. Sarkar.

### **Research Student**

Kamerlingh Onnes Laboratory (Leiden University)

*July 2001 – December 2001 | Leiden, The Netherlands*

Thesis: Measuring the thermal conductivity of normal liquid  $^3\text{He}$  in a restricted geometry.

Supervisor: dr. R. Jochemsen.

### **Internship**

National Aerospace Laboratory NLR

*January 1996 – December 1996 | Amsterdam, The Netherlands*

Internship as electronics engineer responsible for developing parts of a test system for the Data Link Processor Unit and the Avionics Data Link Processor used in modern aircraft.

# *Acknowledgements*

I would like to thank my promotor Dirk Bouwmeester for giving me the opportunity to pursue a doctorate in physics, especially after having spent many years in the corporate world. I equally would like to thank my parents for their everlasting patience and support.

With pleasure I have worked with several students, who all helped to shape our understanding of the toroidal helium plasmas. I would like to thank Timo Blom, Thom Boudewijn, Tim Kortekaas, Vasco Ramalho, Naor Scheinowitz, Daan van Seters, and Steven Zwaan.

As a teaching assistant for the quantum mechanics lectures series by Michiel de Dood and Peter Denteneer, I have enjoyed guiding many students, whose questions have in turn deepened my understanding of this topic.

I would like to thank Michiel de Dood, Wolfgang Löffler, and Martin van Exter for their support during my time in the Leiden Quantum Matter and Optics group.

After a few years of solitary labour, Felix Smits joined the search for toroidal plasmas and I would like to thank him for his efforts and expertise. He also managed to interest the Dutch Institute for Fundamental Energy Research, in particular Waldo Bongers, in our project, for which they made available most microwave components used in our experiments.

I would like to thank Chris Smiet for explaining the many aspects of his simulations of the self-organising knotted magnetic structures in plasma, and for the moments when we joined forces in the lab.

I am grateful for the pleasant cooperation and technical support from Harmen van der Meer from the fine mechanical department, and equally from Harry Visser, Ko Koning, Jos Disselhorst, and many others from the electronics department.

Finally, I would like to thank Jan Willem Dalhuisen for our numerous discussions on the foundational aspects of theoretical physics, which kept me sane during all those months of experimental work.