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Vortex Duality in Higher Dimensions

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List of Publications

Condensing Nielsen–Olesen strings and the vortex–boson duality in 3+1 and higher dimensions

A.J. Beekman, D. Sadri and J. Zaanen

New Journal of Physics **13** 033004 (2011) — arXiv:1006.2267

Electrodynamics of Abrikosov vortices: the Field Theoretical Formulation

A.J. Beekman and J. Zaanen

accepted for Frontiers of Physics — arXiv:1106.3946

The emergence of gauge invariance: the stay-at-home gauge versus local–global duality

J. Zaanen and A.J. Beekman

submitted to Annals of Physics — arXiv:1108.2791

Type-II Mott insulators

A.J. Beekman and J. Zaanen

in preparation

Curriculum vitæ

On the 21st of November, 1979, I was born in Gouda, the Netherlands, where I completed secondary education at the Coornhert Gymnasium in 1997. The following year I spent working and travelling in France and Israel.

I entered the β/γ -propædeuse at the University of Amsterdam, through which program I proceeded to study physics. I graduated as Master of Science in theoretical physics on the thesis *Quantum double symmetries of the even dihedral groups and their breaking* under the supervision of prof. dr. ir. F.A. Bais in 2005. During this time I competed in race rowing, and also organized the Dutch Indoor Rowing Championships for five years.

In 2006 I started PhD research under the supervision of prof. dr. J. Zaanen at the Instituut-Lorentz for theoretical physics, which is part of the Leiden Institute of Physics at Leiden University. During this time I was a teaching assistant for the courses *Advanced Theory of Condensed Matter* by prof. dr. J. Zaanen, *Field Theory* by prof. dr. P.J. van Baal and *Theory of Condensed Matter* by dr. D.I. Santiago. From 2007 to 2011 I was a member of the PhD council of the Dutch Research School of Theoretical Physics.

Since 2007 I am a board member of the Amsterdam Rowing Association. In 2009 I was awarded the Membership of Merit from the Amsterdam Student Rowing Club “Nereus”.

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I would like extend special thanks to Rolf de Jonker for the cover design, and to the proprietors of La Grande Journée in Verbier, Switzerland, where the majority of this work was produced, for their hospitality. Thanks to Tako Bruinsma and Berghauser Pont Publishing for managing the printing of this thesis.

I have been enjoying my time at the Instituut-Lorentz voor theoretische natuurkunde so much that I have extended my residence for quite a while. I thank all my colleagues in past and present, and the support staff Marianne, Fran and Trudy for an enormously stimulating work environment.

The Dutch Research School of Theoretical Physics is a prime example of an organization that is exactly suited for the geographical scale and topical scope it represents, and is instrumental in keeping a wider view within an ever more specializing and divided scientific world. I am glad to have been able to contribute to its progress.

Finally, I thank my parents, sister and brother for being there.