Origami metamaterials : design, symmetries, and combinatorics

Dieleman, P.

Publication List

Published work presented in this thesis:

- P. Dieleman, N. Vasmel, S. Waitukaitis, and M. van Hecke. 'Design of Pluripotent Origami', *in preparation*.

- S. Waitukaitis, P. Dieleman, and M. van Hecke. 'Multistable Mechanisms of Non-Euclidean 4-vertex Origami', *in preparation*.

Other published work:

- M.K. Jawed, P. Dieleman, B. Audoly, and P.M. Reis, 'Untangling the Mechanics and Topology in the Frictional Response of Long Overhand Elastic Knots', *Physical Review Letters*, **115**, 118302 (2015).

Curriculum Vitae

I was born in Rotterdam on the 31st of May in 1990, and grew up in the town of Oostvoorne, to the west of Rotterdam. I received my secondary eduction at the Scholengemeenschap Helinium, in Hellevoetsluis.

After graduating, I enrolled in the BSc program of Physics at *Leiden University*. During my third year, I followed courses at the *Erasmus University* to complete a pre-master program for *Econometrics & Management Science* as my minor. I finished my BSc program with a thesis on the measurement of the electrical conductance of a monolayer of gold nanoparticles in a hexagonal array, in the group of Prof. dr. ir. S. J. van der Molen.

Upon finishing my BSc, I continued in the MSc program *Research in Experimental Physics* at *Leiden University*. I spent seven months in the research group of Prof. dr. Martin van Hecke, where I used density matched hydrogel spheres floating in water to investigate the jamming transition. After this, I went abroad, to the group of Prof. dr. Pedro Reis at the *Massachusetts Institute of Technology*, where I investigated the relation between the mechanics, friction, and topology of knots. In July 2014, I received my MSc diploma cum laude.

Upon returning to the Netherlands, I continued in the group of Prof. dr. Martin van Hecke as a PhD candidate. Here I studied the folding behavior of four-vertices and patterns of four-vertices, the results of which are presented in this thesis. The research in this work has been performed at the Leiden Institute of Physics as well as the NWO-I institute AMOLF, as part of the dual appointment of Prof. dr. Martin van Hecke. I presented my work at various international conferences: the APS March meetings of 2015, 2016, 2017, and 2018 (USA), the MRS Fall meeting 2015 (Boston, USA), ESMC9 2015 (Madrid, Spain), Metamaterials 2015 (Oxford, UK), and the 2015 *Folding and Creasing of Thin Plate Structures* workshop at *ESPCI* (Paris, France).

Throughout my PhD and MSc studies I have assisted in teaching the courses of *Experimentele Natuurkunde 2* (fall 2014, 2015, 2017, and 2018), *Experimentele Natuurkunde 3* (spring 2015), *Fysica van Energie* (spring 2013), *Wiskunde Aansluiting* (fall 2012), and *Inleiding Natuurkunde* (fall 2012). In addition, I was employed by the university as a 1-to-1 tutor for a first year student, and worked at *Stichting Studiebegeleiding Leiden* during my BSc and MSc studies, where I assisted in teaching mathematics to high-school students.

After my PhD, I want to apply my research and analytical skills to challenging contemporary questions, in a position in industry.

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