Thomas Machon

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Employment

May 2018 –	**Lecturer** School of Physics, University of Bristol.
May 2016 – May 2018	**Postdoctoral Fellow** Department of Physics & Astronomy, University of Pennsylvania. Supervised by Randall. D. Kamien.
Oct 2015 – Apr 2016	**Early Career Fellow** Institute for Advanced Study, University of Warwick.

Education

2016	**PhD**, Physics and Complexity Science, University of Warwick, UK Thesis: *Aspects of Geometry and Topology in Liquid Crystalline Order* Supervisors: Gareth P. Alexander and Miha Ravnik (University of Ljubljana). Science Faculty PhD Thesis Prize.
2013	**MSc**, Complexity Science, University of Warwick, UK (Distinction) Theses: *Swarming and phase transitions in Danio Rerio* and *Knotted Defects in Nematic Liquid Crystals.*
2011	**MPhys**, Physics, University of Warwick, UK (1^{st} class) Highest mark in graduating class.

Awards and Prizes

2016	Science Faculty PhD Thesis Prize, University of Warwick, UK.
2015	IAS Early Career Fellowship, University of Warwick, UK.
2012	Chancellor's International Scholarship, University of Warwick, UK.
2011	Jersey Bursary, States of Jersey, Channel Islands.
2011	Styles Prize for Excellence (ranked 1^{st} in graduating class), Department of Physics, University of Warwick, UK.

Teaching

2017	Department of Physics and Astronomy, University of Pennsylvania. *Lecturer: 611, Statistical Mechanics.*
2012-2015	Department of Physics, University of Warwick. *Teaching Assistant: PX149, Mathematics for Physicists.*
2014	Department of Physics & Institute of Mathematics, University of Warwick. *Co-supervised Masters students' final year projects.*
2013-2014	Institute of Mathematics, University of Warwick. *Supervisions (small group tutorials covering all first year courses).*

Publications & Preprints

9. T Machon, *Contact Topology and the Structure and Dynamics of Cholesterics*, New J. Phys. **19**, 113030 (2017).

8. H. Aharoni, T. Machon and R.D. Kamien, *Composite Dislocations in Smectic Liquid Crystals*, Phys. Rev. Lett. **118**, 257801 (2017).

7. T. Machon and G.P. Alexander, *Global Defect Topology in Nematic Liquid Crystals*, Proc. R. Soc. A **472**, 20160265 (2016).

6. T. Machon, R.E. Goldstein, A.I. Pesci and G.P. Alexander, *Instabilities and Solitons in Minimal Strips*, Phys. Rev. Lett. **117**, 017801 (2016).

5. T. Machon and G.P. Alexander, *Umbilic Lines in Orientational Order*, Phys. Rev. X **6**, 011033 (2016).

4. D.A. Beller, T. Machon, S. Copar, D.M. Sussman, G.P. Alexander, R.D. Kamien and R.A. Mosna, *Geometry of the Cholesteric Phase*, Phys. Rev. X **4**, 031050 (2014).

3. T. Machon and G.P. Alexander, *Knotted Defects in Nematic Liquid Crystals*, Phys. Rev. Lett. **113**, 027801 (2014).

2. T. Machon and G.P. Alexander, *Knotted Nematics*, ArXiv:1307.6819 (2013).

1. T. Machon and G.P. Alexander, *Knots and non-orientable surfaces in chiral nematics*, Proc. Natl. Acad. Sci. USA **110**, 14174 (2013).
   Also featured in Liquid Crystals Today **22**, 72 (2013).

Manuscripts in Preparation

Boltzmann Learning and a duality for non-equilibrium critical points (with S.A. Ridout).

Singularity Theory and the Structure of Defects in Smectics (with H. Aharoni, Y. Hu and R.D. Kamien).

Nematic Chainmail and the Abelian Sandpile Model (with G.P. Alexander).

Contact Topology and Berry's Phase (with Y. Hu).

Invited Presentations

January 2018	IMA Workshop on Liquid Crystals, Soft-matter Packing, and Active Systems *University of Minnesota*
July 2017	SIAM Conference on Applied Algebraic Geometry *Georgia Institute of Technology*
July 2017	Seminar *Department of Physics, University of Bristol*
October 2016	Topology Workshop *Department of Physics & Astronomy, University of Pennsylvania*
October 2015	Applied Topology Seminar *Department of Physics, University of Bristol*
September 2014	CECAM Workshop on Knots in Soft Condensed Matter *University of Vienna*
May 2013	Physics Seminar *Department of Physics, University of Ljubljana*

Contributed Presentations

March 2018	APS March Meeting *Los Angeles*
June 2017	GRC on Liquid Crystals (poster) *University of New England, Maine*
March 2017	APS March Meeting *New Orleans*
September 2016	Knots and Links in Biological and Soft Matter Systems (poster) *ICTP*
April 2014	The Physics of Soft and Biological Matter Conference *Homerton College, University of Cambridge*
May 2013	The Mathematics of Liquid Crystals Workshop (poster) *Isaac Newton Institute for Mathematical Sciences, University of Cambridge*

References

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