

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 (1st class)
Highest mark in graduating class.

Awards and Prizes

- 2018 Glenn H. Brown Prize, International Liquid Crystal Society.
- 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 1st in graduating class), Department of Physics, University of Warwick, UK.

Teaching

- 2017 Department of Physics and Astronomy, University of Pennsylvania.
Lecturer: 611, Statistical Mechanics.

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

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

Contributed Presentations

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

References

Randall D. Kamien

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Gareth P. Alexander

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