

# 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.  
Supervisor: 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<sup>st</sup> 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 (ranked 1<sup>st</sup> in graduating class), Department of Physics, University of Warwick, UK.

## Teaching

- 2018 School of Physics, University of Bristol.  
*Lecturer: PHYSM0300, The Physics of Phase Transitions.*
- 2017 Department of Physics and Astronomy, University of Pennsylvania.  
*Lecturer: 611, Statistical Mechanics.*

## Publications & Preprints

12. T. Machon, H. Aharoni, Y. Hu and R.D. Kamien, *Aspects of Defect Topology in Smectic Liquid Crystals*, arXiv:1808.04104 [cond-mat.soft] (2018).
11. T. Machon and G.P. Alexander, *Woven Nematic Defects, Skyrmions and the Abelian Sandpile Model*, Phys. Rev. Lett. **121**, 237801 (2018).
10. T. Machon, *Equilibrium Description of Absorbing States in the Manna Model*, Phys. Rev. E **98**, 062104 (2018).
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).

## Invited Presentations

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 &amp; 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**

University of Warwick  
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