

THOMAS MACHON

H.H. Wills Physics Laboratory
Tyndall Avenue
Bristol
BS8 1TL, United Kingdom

t.machon@bristol.ac.uk
tmachon.com
+44 (0)7494 538744

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 (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 (ranked 1st 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.
- 2018- School of Physics, University of Bristol.
First Year Tutorials.
- 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.

Publications & Preprints

12. T. Machon, H. Aharoni, Y. Hu and R.D. Kamien, *Aspects of Defect Topology in Smectic Liquid Crystals*, Comm. Math. Phys (2019).
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).

Undergraduate Supervision

2018/2019 University of Bristol, MSci: Ilin Karagjozov, *Persistent Homology of Knotted Polymers*

Scientific Activities

July 2019 Seminar, *University of Edinburgh*

June 2019 TCM Meeting, *University of Warwick*

May 2019 Optimal Design of Soft Matter, *Newton Institute* (Contributed Presentation)

March 2019 Soft Matter Workshop, *Fowey Cornwall* (Invited Presentation)

October 2018 Theory Seminar, *University of Bristol*

September 2018 Edwards Symposium, *University of Cambridge*

March 2018 APS March Meeting, *Los Angeles* (Contributed Presentation)

January 2018 IMA Workshop on Liquid Crystals, Soft-matter Packing, and Active Systems
University of Minnesota (Invited Presentation)

July 2017 SIAM Conference on Applied Algebraic Geometry *Georgia Institute of Technology* (Invited Presentation)

July 2017	Seminar <i>Department of Physics, University of Bristol</i>
June 2017	GRC on Liquid Crystals (poster) <i>University of New England, Maine</i>
March 2017	APS March Meeting <i>New Orleans</i> (Contributed Presentation)
October 2016	Topology Workshop <i>Department of Physics & Astronomy, University of Pennsylvania</i> (Invited Presentation)
September 2016	Knots and Links in Biological and Soft Matter Systems <i>ICTP</i> (Poster)
October 2015	Applied Topology Seminar <i>Department of Physics, University of Bristol</i> (Invited Presentation)
September 2014	CECAM Workshop, Knots in Soft Condensed Matter <i>University of Vienna</i> (Invited Presentation)
April 2014	The Physics of Soft and Biological Matter Conference <i>Homerton College, University of Cambridge</i> (Contributed Presentation)
May 2013	The Mathematics of Liquid Crystals Workshop <i>Newton Institute</i> (Poster)
May 2013	Physics Seminar <i>Department of Physics, University of Ljubljana</i>

References

Randall D. Kamien

University of Pennsylvania
 Dept. of Physics and Astronomy, 209 S. 33rd St., Philadelphia, PA 19104, USA
 kamien@physics.upenn.edu (Phone: +1 215 898 5940)

Gareth P. Alexander

University of Warwick
 Dept. of Physics and Centre for Complexity Science, Zeeman Building, Coventry, CV4 7AL, United Kingdom
 g.p.alexander@warwick.ac.uk