

# Vincenzo Vitelli

## Curriculum vitæ

### Contact information

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March 4, 2018

**Postal Address:**

University of Chicago  
929 East 57th Street  
Chicago, Illinois 60637  
United States of America

**Email:** vitelli@uchicago.edu  
**Phone:** 773-834-8829  
**Homepage:** <http://home.uchicago.edu/~vitelli/>

### Professional experience

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<b>Professor</b> Department of Physics and James Franck Institute, University of Chicago	2017 – present
<b>Professor, Chair of Condensed Matter Theory</b> Instituut-Lorentz for Theoretical Physics, Leiden University	2015 – 2017
<b>Associate Professor</b> Instituut-Lorentz for Theoretical Physics, Leiden University	2013 – 2015
<b>Assistant Professor</b> Instituut-Lorentz for Theoretical Physics, Leiden University	2010 – 2013
<b>Post-doctoral Fellow</b> University of Pennsylvania	2006 – 2009

### Education

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<b>PhD in Physics</b> Harvard University <i>Thesis Advisor:</i> David R. Nelson. <i>Thesis title:</i> Crystals, Liquid Crystals and Superfluid He on Curved Surfaces.	September 2000 – June 2006
<b>Visiting Undergraduate Student</b> Massachusetts Institute of Technology	Fall 1999
<b>BSc in Theoretical Physics</b> First Class Honours Imperial College London	October 1997 – July 2000

## Visiting Positions and Awards

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**Kavli Frontiers of Science Fellow** selected by the National Academy of Sciences USA, 2015

**Invited Professor** Laboratoire de Physique Théorique, École Normale Supérieure Paris, 2015

**Nomination** for *Discoverer of the year* at Leiden University, 2015

**Student Nomination** for Faculty of Science Award for Education, Leiden University, 2015

**Invited Professor** Laboratoire de Physico-Chimie Théorique, ESPCI - ParisTech, 2014

**Visiting Research Scholar** to the Initiative for the Theoretical Sciences, CUNY, 2014

**Student Nomination** for Faculty of Science Award for Education, Leiden University, 2014

**Invited Professor of the Joliot-Curie Chair** ESPCI - ParisTech, 2013

**NWO Vidi Laureate** Netherlands Organization for Scientific Research, 2012

**Professeur Invité** Université Paris VII, 2009

**Feinberg Foundation Fellow** Weizmann Institute, 2009

**Herbert Callen Prize** for "*his insightful work on the interplay between geometry and superfluid order*", 2007

**Harold T. White Prize** for *Excellence in Teaching*, Harvard Physics Department, 2005

**Certificate of Distinction** for *Excellence in Teaching*, Harvard Bok Center, 2005

**Nuffield Foundation Award** for *undergraduate research* carried out at MIT and Imperial College, 1999

## Invited Talks and Colloquia

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Invited Talk, Dutch Physics Society, Veldhoven, 17-01-2017

Theory Colloquium, ETHZ, Zurich, 12-12-2016

Marvel Seminar, EPFL, 9-12-2016

Center for Soft Matter Research, NYU, 05-12-2016

SISSA and ICTP Colloquium, Trieste, 23-10-2016

Opening Lecture, Third International CMT School, Wurzburg, 03-10-2016

Yukawa Institute for Theoretical Physics, Kyoto University, 28-09-2016

Lorentz Center workshop, 02-09-2016.

Euromech Colloquium, Grenoble, 12-07-2016.

Out of Equilibrium and active matter, Roscoff, 29-06-2016

Plenary Speaker, International Colloquium on Theoretical Methods in Physics, Rio de Janeiro, 24-06-2016

Active and Smart Matter workshop, Syracuse University, 21-06-2016

International Center of Mathematical Sciences, Edinburgh, 03-06-2016

Physics Colloquium, Ecole Normale Supérieure, Lyon, 02-05-2016

Simons Center for geometry and Physics, Stony Brook, 20-04-2016

Center for Nanoscience Colloquium, LMU Munich, 15-04-2016  
Chez Pierre Seminar, MIT, 7-04-2016  
Applied Physics Colloquium, Cornell, 5-04-2016.  
Invited Talk Dutch Physics Society (FOM) Meeting, Focus session on Granular Matter, Veldhoven, 20-1-2016  
James Frank Institute Colloquium, University of Chicago, 14-01-2016  
Physics Colloquium, University of Bayreuth, 15-12-2015  
Physics Colloquium, NYU, 02-12-2015  
Physics Colloquium, University of North Carolina, 30-11-2015  
Invited Talk Annual Kavli Frontiers of Science Symposium, National Academy of Sciences, Irvine, 07-11-2015  
Invited Talk Workshop on Geometry and Quantum Physics, Natal, 26-10-2015  
International doctoral training session Frontiers in Condensed Matter, Les Houches, 10-09-2015  
Workshop Novel Quantum Materials and Systems, Lorentz Center, Leiden, 11-09-2015  
Physics Colloquium École Normale Supérieure, Paris, 04-06-2015  
Invited Talk International Congress of Ultrasonics, GeorgiaTech Lorraine, 14-5-2015  
Invited Talk APS March Meeting, San Antonio, 3-3-2015  
Physics Colloquium University of Chicago, Chicago, 19-02-2015  
Physics Colloquium New York University, New York, 13-02-2015  
Invited Talk Dutch Physics Society (FOM) Meeting, Focus session on Designer Matter, Veldhoven, 20-1-2015  
Topology Workshop Identifying Order in Complex Systems, Philadelphia, 12-11-2014  
KITP Conference Complexity in Mechanics, Santa Barbara, 23-10-2014  
Amolf Colloquium, Amsterdam, 30-06-2014  
Joint SISSA and ICTP Colloquium, Trieste, 16-1-2014  
Colloquium Max Planck Institute for Dynamics and Self-Organization, Gottingen, 27-11-2013  
Keynote Speaker Geometry and Physics of Spatially Random Structure, Black Forest, Germany, 9-09-2013  
Conference From Cooperativity in Supercooled Liquids to Plasticity of Amorphous Solids, ETH, 27-6-2013  
Newton Institute Conference The Mathematics of Liquid Crystals, Cambridge, 25-06-2013  
GDR Mécanique et Physique des systemes complexes, Paris, 21-06-2013  
IUTAM Symposium Materials and interfaces under high strain rate and large deformations, Metz, 17-06-2013  
APS March Meeting Tutorial, Baltimore, 17-03-2013  
Gordon Research Conference Granular Media, Davidson, 25-7-2012  
Invited Talk APS March Meeting, Boston, 06-03-2012  
Amolf Colloquium, Amsterdam, 13-02-2012  
Granular Days, Twente, 1-02-2012  
Unifying Concepts in Glass Physics V, Paris, 16-12-2011  
Physics Colloquium, Utrecht, 27-05-2011

Trends in Theory, Dalfsen, 20-05-2011  
 Theoretical Physics Colloquium, UvA, Amsterdam, 12-09-2010  
 Complexity and Patterns Meeting, Enschede, 16-10-2010  
 Colloquium Ehrenfestii, Leiden, 03-10-2010  
 Euromech, Lisbon, 09-09-2009  
 Physics Colloquium, McGill, Montreal, 03-12-2009  
 Physics Colloquium, Brandeis, Waltham, 02-26-2009  
 Invited Talk APS March Meeting, New Orleans, 03-10-2008  
 Statistical Physics Conference 23, Genoa, 07-13-2007  
 Granular physics and colloids conference, Naples, 07-05-2007

## Seminars

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Condensend Matter Theory Seminar, Universiteit van Amsterdam, 30-09-2015  
 Laboratoire d'Acoustique, Université du Maine, Le Mans, 23-06-2015  
 Groupe Vitreux, École Normale Supérieure, Paris, 18-06-2015  
 Physics Departmen, Weizmann Institute, Rehovot, 28-05-2015  
 Aspen Center for Physics, Aspen, 02-02-2015  
 Quantum Nanoscience Department, TU Delft, 03-12-2014  
 Casimir School, San Sebastien 03-12-2014  
 School of Engineering and Applied Sciences, Harvard University, Boston, 03-04-2014  
 School of Engineering and Applied Sciences, Harvard University, Boston, 03-04-2014  
 Theoretical Physics Initiative, Graduate School, CUNY, New York, 31-03-2014  
 Laboratory for Research on the Structure of Matter, University of Pennsylvania, Philadelphia, 28-03-2014  
 Physics Department, Umea University, Sweden, 17-01-2014  
 Gran Sasso Science Institute, L' Aquila, 13-01-2014  
 Mathematics Department, Universita' La Sapienza, Roma, 11-01-2014  
 Institut des Matériaux, EPFL, Lausanne, 18-09-2013  
 Casimir Research School, Les Houches 03-09-2013  
 Institute Curie, Paris, 20-06-2013  
 CEA, Saclay, 19-06-2013  
 Institute Langevin Ondes et Images, Paris, 04-06-2013  
 Gulliver Seminar, ESPCI, Paris, 03-06-2013  
 Physique Théorique Seminar, Ecole Normale Supérieure, Paris, 03-06-2013  
 Physico-Chimie Théorique Seminar, ESPCI, Paris, 16-05-2013  
 Scuola Internazionale Superiore di studi avanzati (SISSA), Trieste, 17-04-2013

German Aerospace Center, Koln, 02-04-2013  
University of Massachusetts, Amherst, 28-03-2013  
Institut Charles Sadron, Strasbourg, 12-02-2013  
Rudolf Peierls Center, Oxford, 24-01-2013  
ESPCI, Paris, 09-07-2012  
Cavendish Laboratory, Cambridge, 18-05-2012  
James Frank Institute, Chicago, 11-04-2012  
Brandeis, Waltham, 09-03-2012  
Harvard, Cambridge, 06-03-2012  
Georgia Tech, Atlanta, 24-02-2012  
Groningen University, 05-12-2011  
Forschungszentrum, Juelich, 21-07-2011  
Casimir School, Delft, 25-05-2011  
University of Pennsylvania, 16-05-2011  
University of Chicago, 09-05-2011  
New York University, 04-05-2011  
California institute of Technology, 26-04-2011  
University of California San Diego, 25-04-2011  
University of Twente, 11-04-2011  
University of Eindhoven, 02-11-2011  
University of Twente, 20-08-2010  
Soft Matter Day, Wageningen, 14-04-2010  
Weizmann Institute, 14-12-2009  
Hebrew University of Jerusalem, 25-11-2009  
Technion, Haifa, 14-11-2009  
Weizmann Institute, 04-11-2009  
Tel Aviv University, 02-11-2009  
Université Paris VI, 12-10-2009  
ESPCI, Paris, 12-10-2009  
Université Lyon I, 07-10-2009  
University of North Carolina, Chapel Hill, 12-02-2009  
MRSEC talk, UPenn, Philadelphia, 06-02-2009  
University of California Santa Barbara, Santa Barbara, 29-01-2009  
California Institute of Technology, Pasadena, 23-01-2009  
University of California Los Angeles, Los Angeles, 12-01-2009

Aspen Center of Physics, 06-25-2008  
 Georgia Institute of Technology, Atlanta, 06-03-2008  
 Lorentz Institute, Leiden, 05-07-2008  
 Condensed Matter Seminar, Syracuse University, 11-17-2006  
 MRSEC Chalk Talk, University of Pennsylvania, 06-02-2006  
 Material Research Lab Seminars, Santa Barbara, 05-15-2006  
 Condensed Matter Theory Group Meeting, Boston University, 01-26-2006  
 Widely Applied Math Seminar, DEAS, Harvard, 10-05-2005  
 Condensed Matter Seminar, MIT, 04-13-2005  
 Condensed Matter Seminar, UPenn, 01-18-2005  
 Theoretical Chemistry Seminar, Cornell, 12-05-2004  
 Condensed Matter Seminar, Syracuse University, 10-15-2004  
 Nanophysics Seminar, Dartmouth College, 04-29-2004

## Contributed Talks

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APS March Meeting, Baltimore, 15-3-2016  
 Nonlinear Response of Soft Matter, Konstanz, 02-29-2011  
 American Physical Society Meeting, Pittsburgh, 03-18-2009  
 99 Statistical Mechanics Conference, Rutgers University, 05-12-2008  
 XI International Workshop on Complex Systems, Andalo, 03-19-2008  
 Frontiers in Condensed Matter Physics, Aspen, 02-07-2008  
 American Physical Society Meeting, Denver, 03-07-2007  
 International Liquid Crystal Conference, Keystone, 07-04-2006  
 New England Complex Fluids Work Group, Harvard, 12-15-2005

## Poster Presentations

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Institute for Mathematics and its Applications, Minneapolis, 07-21-2008  
 Frontiers in Condensed Matter Physics, Aspen, 02-06-2008  
 Statistical Physics 23, Genoa, 07-2007  
 Gordon Conferenc, New London, June 2006  
 Frontiers in Materials and Nano science conference, Harvard, 05-20-2005  
 Bioengineering and Medicine conference, Harvard, 04-27-2005  
 APS Meeting, Montreal, 03-24-2004

## Teaching Experience

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Lecturer, **Statistical Field Theory**, Leiden University, Autumn 2013, 2014, 2015 and 2016  
 Lecturer, **Advanced Statistical Physics**, Leiden University, Autumn 2011, 2012, 2013, 2014, 2015 and 2016  
 Lecturer, **Relativistic Electrodynamics**, Leiden University, Spring 2015  
 Lecturer, **Topological Mechanics**, ESPCI ParisTech, June 2014  
 Lecturer, **Topological Mechanics**, 7<sup>th</sup> FAPERJ School, Rio de Janeiro, April 2014  
 Lecturer, **Topological Methods in Theoretical Physics**, Leiden University - Delta Institute, Spring 2014  
 Habilitation to teach in Dutch universities, **BKO Certificate**, January 2011  
 Lecturer, **Renormalization Group Methods**, Leiden University - Delta Institute, Spring 2011  
 Lecturer, **Fluid Dynamics**, Master in Physics, Leiden University, Fall 2010  
 Lecturer, **Elasticity and Geometry**, Dutch Research School of Theoretical Physics, Spring 2010  
 Lecturer, **Econophysics** Bachelor in Physics, Leiden University, Winter 2010

I was a non-resident tutor at Elliott House in Harvard in the academic years 2002-2004. I served as a teaching assistant in the following courses taught at Harvard:

**Electromagnetism**, Summer 2005, Spring 2005, Spring 2001  
**Quantum Theory of Solids**, Fall 2003  
**Topics in Soft Matter and Biophysics**, Spring 2003  
**Graduate Statistical Physics**, Fall 2002, Spring 2001  
**Applied Mathematics**, Spring 2002  
**Mechanics**, Fall 2000

## Service

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**Coordination Team** Leiden Institute of Physics, 2014-2015  
**Teaching Committee** Leiden Institute of Physics, 2013-2014  
**Co-organizer of the Ehrenfest Colloquium** Leiden Institute of Physics, 2013-2014  
**Co-organizer of the Physics Café** Leiden Institute of Physics, 2013-2014  
**Member of faculty search committee** for *Soft Condensed Matter Theory and Statistical Physics*, Universiteit van Amsterdam, 2014  
**Member of faculty search committee** for *Condensed Matter Theory*, Delta Institute of Theoretical Physics and Universiteit van Amsterdam, 2013  
**Member of faculty search committee** for *Condensed Matter Theory*, Delta Institute of Theoretical Physics and Utrecht University, 2012

## Professional Activities

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- Co-organizer**, Topological Metamaterials and Beyond, Aspen Center of Physics, 02-01-2016
- Guest Editor** for *New Journal of Physics* special issue on *Topological Mechanics*, 2016.
- Co-organizer**, Lorentz Center Workshop, *Topological Materials at  $\hbar = 0$ : optical, mechanical and acoustic analogues of topological insulators*, 2016.
- Organizing committee**, FOM Veldhoven Meeting, Dutch Physics Society, 2016.
- Co-organizer**, Boulder School in Condensed Matter Physics, *Soft matter in and out of equilibrium*, 2015.
- Co-organizer**, Lorentz Center Workshop, *Topological mechanics: from metamaterials to robots*, 2014.
- Participant**, KITP program, *Complexity in mechanics: Intermittency and collective phenomena in disordered solids*, Santa Barbara, 2014.
- Co-organizer**, Statistical Physics and Theoretical Condensed Matter School, Dutch Research School Theoretical Physics, 2012, 2013 and 2014.
- Guest Editor** for *Soft Matter* special issue on *Geometry and Topology of Soft Materials*, 2013.
- Chairperson**, for *Granular Materials and Jamming*, 7<sup>th</sup> IDMRCS Conference, 2013.
- Co-organizer**, Lorentz Center Workshop, *Modern Perspectives on Thin Sheets*, 03-09-2012.
- Member of user committee**, for *Vici Grant*, awarded to Prof. S. Luding, 2012-2016.
- Co-organizer**, 21<sup>st</sup> International Materials Research Congress, *Soft Responsive Materials*, Cancun, 13-08-2012.
- Co-organizer**, Aspen Center for Physics, *Condensed Matter Winter Conference*, 03-01-2011.
- Co-organizer**, Lorentz Center Workshop, *Capillary shaping of solutes*, 17-05-2010.
- Member**, Institute of Complex Adaptive Matter, *Fellows Committee*.
- Chair** of session on *Statistical and Soft Condensed Matter Physics*, FOM Meeting, Veldhoven, 20-01-2010.
- Chair** of symposium on *Jamming at nonzero temperature and stress*, APS Meeting, Pittsburgh, 03-17-2009.
- Participant**, Institute for Mathematics and its Applications, *Geometrical Singularities*, July 2008.
- Co-organizer**, University of Pennsylvania, *Mid-Atlantic Soft Matter Workshop*, 06-08-2008.
- Participant**, Aspen Center for Physics, *Interfaces, Topological Defects and Flexible Packings*, June 2008.
- Participant**, Aspen Center for Physics, *Frontiers in Condensed Matter Physics*, February 2008.
- Participant**, Aspen Center for Physics, *Jamming Workshop*, July 2007.
- Participant**, International School of Physics "Enrico Fermi", *The Physics of Complex Systems*, July 2003.
- Participant**, Boulder School in Condensed Matter Physics, *Physics of Soft Condensed Matter*, 2002.
- Participant**, Boulder School in Condensed Matter Physics, *Non-equilibrium Statistical Physics*, 2001.
- Participant**, Summer School in *Biomathematics*, Propriano, 2000.
- Referee** for Science, Physical Review Letters, Nature Physics, Proceedings of the National Academy of Sciences, Reviews of Modern Physics, Physical Review E and B, Europhysics Letters, Nanophysics Letters, Journal of Statistical Physics, Journal of Chemical Physics, Journal of Materials Chemistry, Soft Matter, European Journal Physics E, Philosophical Magazine, Physica A.



**Referee** of condensed matter physics books for Taylor & Francis, Chapman & Hall and CRC Press.

**Grant Reviewer** for the Netherlands Foundation for Fundamental Research (FOM), the German Research Foundation (DFG), the Israel Science Foundation (ISF) and the Swiss National Science Foundation (SNSF).

## Funding

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<b>FOM Project Grant,</b> <i>From soft matter to dark matter: the statistical physics of lensing</i> Awarded by the Netherlands Foundation for Fundamental Research (FOM)	2010
<b>Programma Grant</b> <i>Marginal soft matter: Leveraging the mechanics of responsive networks</i> Awarded by the Netherlands Foundation for Fundamental Research (FOM)	2012
<b>Vidi Grant,</b> <i>From shocks to failure: the physics and geometry of fragility,</i> Awarded by the Netherlands Organization for Scientific Research (NWO)	2012
<b>Huygens PhD Fellowship</b> Awarded by Leiden University to fund Richard Green's doctoral studies	2012
<b>Delta Institute of Theoretical Physics Post-doctoral Fellowship</b> Two years post-doctoral position on topological mechanics (awarded to Jayson Paulose)	2012
<b>Chinese Science Council Phd Fellowship</b> Awarded to fund Yujie Zhou's PhD on topological mechanics	2013
<b>Nano-front Phd Fellowship</b> Awarded to fund research on topological mechanics with A. Akhmerov	2015

## Group Members

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**Postdoctoral Fellows:** Dr. D. Banerjee, Dr. A. Souslov, Dr. M. Fruchart

**PhD students:** R. Green, H. Abbaszadeh

## Former Group Members

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### PhD Students

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<b>Yujie Zhou</b> <i>Thesis title: Wave propagation in mechanical metamaterials</i>	17-10-2017
<b>Benjamin C. van Zuiden</b> <i>Thesis title: Topology and Geometry in Chiral Liquids</i>	27-09-2017
<b>Thomas H. Beuman</b> <i>Thesis title: The Stochastic Geometry of non-Gaussian Fields</i> next <i>post-doc Leiden University</i>	08-12-2015
<b>Vincenz Koning</b> <i>Thesis title: On the geometry of fracture and frustration</i> next <i>private sector</i>	26-11-2014

**Nitin Upadhyaya**

04-11-2013

*Thesis title: Solitary waves and fluctuations in fragile matter*  
 next *Lecturer in Applied Mathematics, Harvard University*

**Postdoctoral Fellows**

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**Dr. Leopoldo Gomez**, next *faculty member at Universidad Nacional del Sur*

**Dr. Stephan Ulrich**, next *private sector*

**Dr. Nitin Upadhyaya**, next *Lecturer in Applied Mathematics, Harvard University*

**Dr. Bryan Chen**, next *Post doctoral fellow, University of Massachusetts, Amherst*

**Dr. Jayson Paulose**, next *Post doctoral fellow, University of California, Berkeley*

**Master Students**

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**A. Tichler**, next *Reservoir Engineer at Shell*

**T. H. Beuman**, next *PhD student at the Instituut-Lorentz*

**V. Koning**, next *PhD student at the Instituut-Lorentz*

**S. Kozhuharov**, next *private sector*

**S. C. F. van Opheusden**, next *Phd student in Neuroscience at New York University*

**B. C. van Zuiden**, next *PhD student at the Instituut-Lorentz*

**F. M. G. J. Coppens**, *PhD student at IRSAMC Institute, Toulouse*

**F. Milan**, next *PhD student in Physics at Rome University*

**A. Meeussen**, next *PhD student at AMOLF, Amsterdam*

**H. Abbaszadeh**, next *PhD student at the Instituut-Lorentz*

**G. Baardink**

**Publications**

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- [70] A. Souslov, K. Dasbiswas, S. Vaikuntanathan, and V. Vitelli, *Topological waves and odd viscosity in chiral active fluids and plasmas*, (2018)
- [69] D. Z. Rocklin, V. Vitelli, and X. Mao, *Folding mechanisms at finite temperature*, (2018)
- [68] M. Fruchart, S.-Y. Jeon, K. Hur, V. Cheianov, U. Wiesner, and V. Vitelli, *Soft self-assembly of weyl materials for light and sound*, (2017)
- [67] K. Bertoldi, V. Vitelli, J. Christensen, and M. van Hecke, *Flexible mechanical metamaterials*, **Nature Reviews Materials** 2, 17066 (2017).
- [66] G. Baardink, A. Souslov, J. Paulose, and V. Vitelli, *Localizing softness and stress along loops in 3d topological metamaterials*, **Proceedings of the National Academy of Sciences** 115, 489–494 (2017).
- [65] Y. Hadad, V. Vitelli, and A. Alu, *Solitons and propagating domain walls in topological resonator arrays*, **ACS Photonics** 4, 1974–1979 (2017).

- [64] A. Souslov, B. C. van Zuiden, D. Bartolo, and V. Vitelli, *Topological sound in active-liquid metamaterials*, **Nature Physics** 13, 1091–1094 (2017).
- [63] D. Banerjee, A. Souslov, A. G. Abanov, and V. Vitelli, *Odd viscosity in chiral active fluids*, **Nature Communications** 8 (2017).
- [62] Y. Zhou, B. G. Chen, N. Upadhyaya, and V. Vitelli, *Kink-antikink asymmetry and impurity interactions in topological mechanical chains*, **Phys. Rev. E** 95, 022202 (2017).
- [61] N. P. Mitchell, V. Koning, V. Vitelli, and W. T. M. Irvine, *Fracture in sheets draped on curved surfaces*, **Nature Materials** 16, 89–93 (2017), See also Elastic sheets: Cracks by design, by Ken Kamrin, *Nature Materials* 16, 8–9 (2017).
- [60] H. Abbaszadeh, A. Souslov, J. Paulose, H. Schomerus, and V. Vitelli, *Sonic Landau levels and synthetic gauge fields in mechanical metamaterials*, **Physical Review Letters** 119 (2017).
- [59] B. C. van Zuiden, J. Paulose, W. T. M. Irvine, D. Bartolo, and V. Vitelli, *Spatiotemporal order and emergent edge currents in active spinner materials*, **Proceedings of the National Academy of Sciences** 113, 12919–12924 (2016), See Spin City, by A. Klopper, *Nature Physics* 12, 1090 (2016).
- [58] A. S. Meeussen, J. Paulose, and V. Vitelli, *Geared topological metamaterials with tunable mechanical stability*, **Phys. Rev. X** 6, 041029 (2016).
- [57] M. Pelliccia, P. Andreozzi, J. Paulose, M. D’Alicarnasso, V. Cagno, M. Donalizio, A. Civra, R. M. Broeckel, N. Haese, P. J. Silva, R. P. Carney, V. Marjomäki, D. N. Streblov, D. Lembo, F. Stellacci, V. Vitelli, and S. Krol, *Additives for vaccine storage to improve thermal stability of adenoviruses from hours to months*, **Nature Communications** 7, 13520 (2016).
- [56] R. Green, J. Toner, and V. Vitelli, *Geometry of thresholdless active flow in nematic microfluidics*, **Physical Review Fluids** 2 (2017).
- [55] V. Koning and V. Vitelli, “Crystals and liquid crystals confined to curved geometries,” in *Fluids, colloids and soft materials: an introduction to soft matter physics* (John Wiley & Sons, Inc, Apr. 2016), pp. 369–386.
- [54] M. M. Driscoll, B. G. Chen, T. H. Beuman, S. Ulrich, S. R. Nagel, and V. Vitelli, *The role of rigidity in controlling material failure*, **Proceedings of the National Academy of Sciences** 113, 10813–10817 (2016).
- [53] V. Koning, T. Lopez-Leon, A. Darmon, A. Fernandez-Nieves, and V. Vitelli, *Spherical nematic shells with a threefold valence*, **Physical Review E** 94, 012703 (2016).
- [52] M. Ceriotti and V. Vitelli, *Vitrification: machines learn to recognize glasses*, **Nature Physics** 12, 377–378 (2016).
- [51] D. Z. Rocklin, B. G. Chen, M. Falk, V. Vitelli, and T. C. Lubensky, *Mechanical weyl modes in topological Maxwell lattices*, **Physical review letters** 116, 135503 (2016), Editors’ Suggestion.
- [50] B. G. Chen, B. Liu, A. A. Evans, J. Paulose, I. Cohen, V. Vitelli, and C. D. Santangelo, *Topological mechanics of origami and kirigami*, **Physical review letters** 116, 135501 (2016), Synopsis.
- [49] C. Brito, V. Vitelli, and O. Dauchot, *Orientalional order at finite temperature on curved surfaces*, **Journal of Statistical Mechanics: Theory and Experiment** 2016, 033208 (2016).
- [48] J. Paulose, A. S. Meeussen, and V. Vitelli, *Selective buckling via states of self-stress in topological metamaterials*, **Proceedings of the National Academy of Sciences** 112, 7639–7644 (2015).

- [47] L. M. Nash, D. Kleckner, A. Read, V. Vitelli, A. M. Turner, and W. T. M. Irvine, *Topological mechanics of gyroscopic metamaterials*, **Proceedings of the National Academy of Sciences** *112*, 14495–14500 (2015), See News and Views by P. Ball, *Nature Materials*, (2016).
- [46] A. Ward, F. Hilitski, W. Schwenger, D. Welch, A. W. C. Lau, V. Vitelli, L. Mahadevan, and Z. Dogic, *Solid friction between soft filaments*, **Nature materials** *14*, 583–588 (2015).
- [45] L. R. Gómez, N. A. García, V. Vitelli, J. Lorenzana, and D. A. Vega, *Phase nucleation in curved space*, **Nature communications** *6* (2015).
- [44] J. Paulose, B. G. Chen, and V. Vitelli, *Topological modes bound to dislocations in mechanical metamaterials*, **Nature Physics** *11*, 153–156 (2015), Cover, See News and Views by T. Witten, *Nature Physics*, (2015).
- [43] V. Vitelli, N. Upadhyaya, and B. G. Chen, *Topological mechanisms as classical spinor fields*, **arXiv:1407.2890** (2014).
- [42] B. G. Chen, N. Upadhyaya, and V. Vitelli, *Nonlinear conduction via solitons in a topological mechanical insulator*, **Proceedings of the National Academy of Sciences** *111*, 13004–13009 (2014), See Inner workings: Legos in the Lab by S. Ornes, *Proc. Natl. Acad. Sci. USA*, *112* (42) 12901, (2015), and Edging into the spotlight, by S. Ornes, *Physics World*, *28*, 6 (2015).
- [41] J.-B. Caussin, A. Solon, A. Peshkov, H. Chaté, T. Dauxois, J. Tailleur, V. Vitelli, and D. Bartolo, *Emergent spatial structures in flocking models: a dynamical system insight*, **Phys. Rev. Lett.** *112*, 148102 (2014), Highlighted in Physics Synopsis.
- [40] T. H. Beuman, A. M. Turner, and V. Vitelli, *Geometrical detection of weak non-gaussianity upon coarse-graining*, **Journal of Statistical Physics** *157*, 571–581 (2014).
- [39] V. Koning, B. C. van Zuiden, R. D. Kamien, and V. Vitelli, *Saddle-splay screening and chiral symmetry breaking in toroidal nematics*, **Soft Matter** (2014).
- [38] V. Vitelli and W. Irvine, *The geometry and topology of soft materials*, **Soft Matter** *9*, 8086–8087 (2013).
- [37] S. Ulrich, N. Upadhyaya, B. van Opheusden, and V. Vitelli, *Shear shocks in fragile networks*, **Proceedings of the National Academy of Sciences** *110*, 20929–20934 (2013).
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