Vincenzo Vitelli

Curriculum Vitae

Instituut-Lorentz
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Education

Harvard University,
PhD in Physics, September 2000 - June 2006.
Thesis advisor: David R. Nelson
Thesis title: Crystals, Liquid Crystals and Superfluid He on Curved Surfaces.

Imperial College London,
Bsc in Theoretical Physics, First Class Honours, October 1997 - July 2000.

Professional Experience

Assistant Professor
Instituut-Lorentz for Theoretical Physics, Leiden University, 2010 - .

Feinberg Foundation Fellow
Weizmann Institute, 2009 .

Professeur Invité
Université Paris VII - ESPCI, 2009 .

Post-doctoral Researcher,
University of Pennsylvania, 2006 - 2009 .

Teaching Experience

I was a non-resident tutor at Elliott House in Harvard in the academic years 2002-2004. I served as a teaching assistant in charge of giving weekly problem solving sessions and helping to prepare and grade problems sets and exams 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.

Awards

Herbert Callen Prize for 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 (1999).

Invited Talks and Colloquia

Energy Propagation and Localization in Jammed Sphere Packings, Euromech, Lisbon, 09-09-2009.

Heat conduction in amorphous solids, Physics Colloquium, McGill, Montreal, 03-12-2009.

Heat conduction in amorphous solids, Physics Colloquium, Brandeis, Waltham, 02-26-2009.

Columnar and crystalline monolayers on curved substrates, APS Meeting, New Orleans, 03-10-2008.

The mixed character of the jamming transition, Statistical Physics Conference 23, Genoa, 07-13-2007.

Energy transport in model jammed systems, Granular physics and colloids conference, Naples, 07-05-2007.

Contributed Talks

Heat conduction in amorphous solids, American Physical Society Meeting, Pittsburgh, 03-18-2009.

Energy transport in jammed sphere packings, 99 Statistical Mechanics Conference, Rutgers University, 05-12-2008.

Energy transport in model jammed systems, XI International Workshop on Complex Systems, Andalo, 03-19-2008.

Columnar order on curved substrates, Frontiers in Condensed Matter Physics, Aspen, 02-07-2008.

Crystallography on a curved substrate, American Physical Society Meeting, Denver, 03-07-2007.

Liquid Crystal Order on Curved Substrates, International Liquid Crystal Conference, Keystone, 07-04-2006.

Nematic Double Emulsions, New England Complex Fluids Workgroup, Harvard, 12-15-2005.

Seminars

The stochastic geometry of the cosmic shear, Weizmann Institute, 25-11-2009.

Columnar order on a curved substrate, Hebrew University of Jerusalem, 25-11-2009.

Energy transport, localization and anharmonicity in model amorphous solids, Technion, Haifa, 14-11-2009.

Energy transport, localization and anharmonicity in model amorphous solids, Weizmann Institute, 04-11-2009.

Heat transport, localization and anharmonicity in model amorphous solids, Tel Aviv University, 02-11-2009.

Energy transport, localization and anharmonicity in model amorphous solids, Université Paris VI, 12-10-2009.

Energy transport, localization and anharmonicity in model amorphous solids, ESPCI, Paris, 12-10-2009.

Heat transport, localization and anharmonicity in model amorphous solids, Université Lyon I , 07-10-2009.

Heat conduction in amorphous solids, University of North Carolina, Chapel Hill, 12-02-2009.

Heat conduction in amorphous solids, MRSEC talk, UPenn, Philadelphia, 06-02-2009.

Heat conduction in amorphous solids, University of California Santa Barbara, Santa Barbara, 29-01-2009.

Heat conduction in amorphous solids, California Institute of Technology, Pasadena, 23-01-2009.

Heat conduction in amorphous solids, University of California Los Angeles, Los Angeles, 12-01-2009.

Condensed matter order on curved surfaces: concepts and methods, Aspen Center of Physics, 06-25-2008.

Energy transport in amorphous solids, Georgia Institute of Technology, Atlanta, 06-03-2008.

Energy transport in amorphous solids, Lorentz Institute, Leiden, 05-07-2008.

Crystallography on Curved Substrates, Condensed Matter Seminar, Syracuse University, 11-17-2006.

Crystallography on Curved Substrates, MRSEC Chalk Talk, University of Pennsylvania, 06-02-2006.

Crystallography on Curved Substrates, Material Research Lab Seminars, Santa Barbara, 05-15-2006.

Crystallography on Curved Substrates, Condensed Matter Theory Group Meeting, Boston University, 01-26-2006.

Condensed matter order on a curved surface, Widely Applied Math Seminar, DEAS, Harvard, 10-05-2005.

Theory of topological defects in curved space, Condensed Matter Seminar, MIT, 04-13-2005.

Theory of topological defects in curved space, Condensed Matter Seminar, UPenn, 01-18-2005.

Theory of liquid crystals textures on curved substrates, Theoretical Chemistry Seminar, Cornell, 12-05-2004.

Defect textures in thin films on a curved surface, Condensed Matter Seminar, Syracuse University, 10-15-2004.

Interaction between topological defects and curvature, Nanophysics Seminar, Dartmouth College, 04-29-2004.

Poster Presentations

A geometric theory of columnar phases on a curved substrate, Institute for Mathematics and its Applications, Minneapolis, 07-21-2008.

Energy transport in model jammed systems, Frontiers in Condensed Matter Physics, Aspen, 02-06-2008.

Energy transport in model jammed systems, Statistical Physics 23, Genoa, 07-2007.

Defect generation and deconfinement on corrugated topographies, Gordon Conference, New London, June 2006.

Colloids and Order on curved surfaces, Frontiers in Materials and Nanoscience conference, Harvard, 05-20-2005.

Aspects of curved space crystallography, Bioengineering and Medicine conference, Harvard, 04-27-2005.

Defect generation and deconfinement on corrugated topographies, APS Meeting, Montreal, 03-24-2004.

Professional Activities

Referee for Physical Review Letters, Nature 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.

Professional books referee for Taylor & Francis, Chapman & Hall and CRC Press.

Chair of invited symposium on *Jamming at nonzero temperature and stress*, APS Meeting, Pittsburgh, 03-17-2009.

Participant, Minnesota Institute for Mathematics and its Applications, *Geometrical Singularities and Singular Geometries*, July 2008.

Participant, Aspen Center for Physics, *Interfaces, Topological Defects and Flexible Packings: Applied Geometry in Condensed Matter*, June 2008.

Co-organizer, University of Pennsylvania, *Mid-Atlantic Soft Matter Workshop*, 06-08-2008.

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.

Publications

1) N. Xu, **V. Vitelli**, A. J. Liu, S. R. Nagel, *Anharmonicity and quasi-localization of the excess low-frequency vibrations in jammed solids*, arXiv:0909.3701, (2009).

2) **V. Vitelli**, N. Xu, M. Wyart, A. J. Liu, S. R. Nagel, *Heat transport in model jammed solids*, arXiv:0908.2176, (2009).

3) R. D. Kamien, D. R. Nelson, C. Santangelo and **V. Vitelli**. *Extrinsic Curvature, Geometric Optics, and Lamellar Order on Curved Substrates*, Phys. Rev. E **80**, 051703 (2009).

4) **V. Vitelli**, B. Jain, R. D. Kamien, *Topological Defects in Gravitational Lensing Shear Fields*, J. Cosmol. Astropart. Phys. **09**, 034 (2009).

5) N. Xu, **V. Vitelli**, M. Wyart, A. J. Liu, S. R. Nagel, *Energy transport in jammed sphere packings*, Phys. Rev. Lett. **102**, 038001 (2009).

6) A. M. Turner, **V. Vitelli** and D. R. Nelson, *Vortices on Curved Substrates*, arXiv:0807.0413, to appear in Rev. Mod. Phys. (2009).

7) A. Fernandez-Nieves, **V. Vitelli**, A. Utada, D. R. Link, D. R. Nelson and D. A. Weitz, *Novel defect structures in nematic shells*, Phys. Rev. Lett. **99**, 157801 (2007).

8) A. Hexemer, **V. Vitelli**, E. J. Kramer and G. H. Fredrickson, *A Monte Carlo study of crystalline order and defects on weakly curved surfaces*, Phys. Rev. E **76**, 051604 (2007)

9) C. Santangelo, **V. Vitelli**, R. D. Kamien and D. R. Nelson, *A geometric theory of columnar phases on a curved substrate*, Phys. Rev. Lett. **99**, 017801 (2007).

10) **V. Vitelli**, J. B. Lucks and D. R. Nelson, *Crystallography on a curved substrate*, Proc. Natl. Acad. Sci. USA **103**, 12323 (2006).

11) **V. Vitelli** and D. R. Nelson, *Nematic textures in spherical shells*, Phys. Rev. E **74**, 021711, (2006).

12) **V. Vitelli** and A. M. Turner, *Anomalous coupling between topological defects and curvature*, Phys. Rev. Lett. **93**, 215301 (2004).

13) **V. Vitelli** and D.R. Nelson, *Defect generation and deconfinement on corrugated topographies*, Phys. Rev. E **70**, 051105 (2004).

14) M. B. Plenio and **V. Vitelli**, *The physics of forgetting: Landauer's erasure principle and information theory*, Contemporary Physics **42**, 25 (2001).

15) M. P. Blencowe and **V. Vitelli**, *Universal quantum limits on single-channel information, entropy and heat flow*, Phys. Rev. A **62**, 052104 (2000).