

Curriculum Vitae, Dr Arianna Bottinelli

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Currently ◇ **Associate Editor.** July 2019 - present. Communications Physics, SpringerNature, London (UK).

Education & Past ◇ **Postdoctoral researcher.** February 2019 - June 2019. Inria Rennes (France).

Past

Positions

◇ **Postdoctoral fellow.** April 2017 - January 2019. NORDITA - Nordic Institute for Theoretical Physics, and Stockholm University (Sweden).

◇ **Ph.D. Applied Mathematics.** September 2011 - November 2016. Collective Behaviour Group and Centre for Interdisciplinary Mathematics (CIM), Uppsala University.
Thesis title: “*Modelling collective movement and transport network formation in living systems*”.

◇ **Research Assistant.** January 2011 - September 2011. Collective Behaviour, Uppsala University.

◇ **M. Sc. Physics.** 2010. Università Statale di Milano, Milan, Italy, with grade 110/110, *cum laude*.

◇ **B. Sc. Physics.** 2007. Università Statale di Milano, Milan, Italy, with grade 105/110.

Publications ◇ **A. Bottinelli**, S. Henkes, J.L. Silverberg, “Can high-density human collective motion be forecasted by spatiotemporal fluctuations?”, arXiv:1809.07875v2.

◇ **A. Bottinelli**, M. Gherardi, and M. Barthelemy, “Efficiency and shrinking in evolving networks”, *Journal of the Royal Society Interface*, 16: 20190101, (2019) .

◇ **A. Bottinelli** and J.L. Silverberg, “How to: Using Mode Analysis to Quantify, Analyze, and Interpret the Mechanisms of High-Density Collective Motion”, *Frontiers in Applied Mathematics and Statistics*, 3, 26, (2017).

◇ **A. Bottinelli**, R. Louf, and M. Gherardi, “Balancing building and maintenance costs in growing transport networks”, *Physical Review E*, 96 032316 (2017).

◇ **A. Bottinelli**, D.J.T. Sumpter, and J.L. Silverberg, “Emergent Structural Mechanisms for High-Density Collective Motion Inspired by Human Crowds”, *Physical Review Letters*, 117, 228301, (2016).

◇ **A. Bottinelli**, E. van Wilgenburg, D.J.T Sumpter, and T. Latty, “Local cost minimisation in ant transport networks: from small-scale data to large-scale tradeoffs”, *Journal of the Royal Society Interface*, 12 20150780 (2015).

◇ **A. Bottinelli**, A. Perna, A.J.W. Ward, D.J.T. Sumpter, “How do fish use the movement of other fish to make decisions?”, *Proceedings of the European Conference on Complex Systems 2012*, Springer International Publishing (2013).

◇ **A. Bottinelli**, B. Bassetti, M.C. Lagomarsino, M. Gherardi, “Influence of homology and node age on the growth of protein-protein interaction networks.”, *Physical Review E*, 86 041919 (2012).

Science Communication ◇ 2021. “Unreal art and hidden physics”, *Nature Physics*, 17 (4), 425-425.

◇ 2019. “When dense crowds act like soft solids”, *Physics Today*, 72 (9), 70-71.

- ◇ 2019. “The thin line between physics and biology”, *Nature Reviews Physics*, 1 (10), 580-580.
- ◇ 2017. I was interviewed by the Swedish National television (www.svt.se) about my research on high-density crowds. Other interviews included the Swedish national radio, the Swedish national newspaper *Dagens Nyheter*, a printed article on the Swedish magazine “*Magasinet Filter*”, and several international online articles. Full list available at www.ariannabottinelli.com.
- ◇ 2017. “Disorder and Disasters in High-Density Crowds”, *SIAM News*.
- ◇ 2016. “Ants and Mathematics” invited popular science talk at the Swedish Outdoor Association.
- ◇ 2015. I was interviewed by several international online newspapers about my research on ant transportation networks.

Computer Skills

- ◇ **Operating systems:** Linux, Mac OS X, Windows.
- ◇ **Programming:** Matlab, C++, R.
- ◇ **Text authoring:** L^AT_EX, MS Office, OpenOffice.
- ◇ **Web:** HTML, Wordpress.
- ◇ **Graphic Design:** Inkscape.
- ◇ **Other:** Excel, PowerPoint.

Academic Activity

- ◇ **Students supervision.**
 - 2018. Olle Eriksson, Master thesis in Applied Mathematics, Uppsala University. [Supervisor]
 - 2015. John Svensson and Andreas Gådin, Master project in Computer Science, Uppsala University. [Co-supervisor].
- ◇ **Conference organization.** 2016. Workshop “Collective Motion 2016”, Uppsala University. [Main organizer].
- ◇ **Teaching.** 2012-2013. “Mathematical Modelling in Biology”, Biology Department, Uppsala University; \approx 20 students, master and graduate; 20 hours frontal lectures + 18 hours computer lab.

Invited Talks

- ◇ 2021. “Orbital Consortium seminars series” (online).
- ◇ 2020. Conference “Third Infinity”, Goettingen (Germany).
- ◇ 2019. Workshop “Interdisciplinary Challenges in Non-Equilibrium Physics”, Edinburgh (UK).
- ◇ 2018. Workshop “Swarm Robotics: Pushing the State of the Art”, Rome (Italy).
- ◇ 2017. Workshop “Mathematical Models in Ecology and Evolution”, London (UK).

Invited Seminars

- ◇ 2019. Department of Mathematics, Statistics, and Physics, Newcastle University (UK).
- ◇ 2018. DAMTP, University of Cambridge (UK).
- ◇ 2018. INRIA, Robotics and Computer Science Department, University of Rennes (France).
- ◇ 2018. Bartolo Lab, Physics department, ENS Lyon (France).
- ◇ 2018. Soft and Biological Matter research group, Physics Department, Oxford (UK).
- ◇ 2017. Syracuse Biomaterials Institute and Physics Department, Syracuse University (USA).
- ◇ 2017. Department of Applied Mathematics, City, University of London (UK).
- ◇ 2016. Nordic Institute for Theoretical Physics, Stockholm (Sweden).
- ◇ 2016. Namur Centre for Complex Systems, Namur (Belgium).
- ◇ 2014. YRNCS Multidisciplinary workshop, Lucca (Italy).

Grants and Awards

- ◇ 2018. SNIC allocation for computational resources [SNIC 2018/8-253].
- ◇ 2017. Nordita Fellowship 2017-2019 for postdoctoral research.
- ◇ 2017. Wenner-Gren travel grant.

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- ◇ 2017. GSOFIT travel grant.
- ◇ 2015. Best Flash Talk Award at the “Mediterranean School of Complex Networks”.
- ◇ 2014. EtoilePM travel grant.
- ◇ 2014. Wallenbergs travel grant.