

## Oliver Smith — Curriculum Vitae

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Website/Code: [olly.website/sims](http://olly.website/sims)

**Postdoctoral researcher in applied mathematics** 2020-present

*University of Nottingham*

- Developing mathematical methods and software to gauge the stability and performance of control systems for low-carbon generators and micro-grids.

**PhD in Applied Mathematics** 2016-2020

*University of Nottingham*

- Researched the dynamics and resilience of complex networks using techniques from game theory, data analysis and nonlinear dynamics. Focused on applications to power grids.

**MSc in Scientific Computing** 2014-2015

*University of Nottingham*

- Studied high performance numerical algorithms, machine learning and computational models of physical systems, such as fluid dynamics problems, using Python, Fortran, and C++.

**BSc in Physics** 2010-2014

*University of Manchester*

### Publications (lead author)

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- **The effect of renewable energy incorporation on power grid stability and resilience**  
O. Smith, O. Cattell, E. Farcot, R.D. O’Dea, K.I. Hopcraft, (2022) *Sci. Adv.*, vol. 8, eabj6734.
- **Cascading failures in networks of heterogeneous node behaviour**  
O. Smith, E. Farcot, J. Crowe, R.D. O’Dea, K.I. Hopcraft, (2020) *Phys. Rev. E* 101, 020301(R),
- **The Price of Anarchy in flow networks as a function of node properties**  
O. Smith, J. Crowe, R.D. O’Dea, K.I. Hopcraft, (2019) *Eur. Phys. Lett.*, 127(1).

### Technical skills

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- Programming languages: Fortran, Python, Julia, Matlab, C++, R, JavaScript.
- Other: LaTeX, Adobe Illustrator, HTML/CSS, Simulink, PowerFactory.
- Experience using HPC facilities and parallel computing using OpenMP and OpenCL.

### Other experience and awards

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- STEM for Britain 2022 finalist.
- Organised and taught data visualisation workshops at the University of Nottingham.
- Presented at numerous international conferences; e.g., “Conference of Complex Systems” 2018 and 2019 (Greece and Singapore respectively), “Critical and Collective Effects in Graphs” 2019 (France), “IoP Graph Theory and Physics” 2018 (London)
- Experience developing interactive software and user interfaces to demonstrate work; see [olly.website/sims](http://olly.website/sims) for an example of an interactive model of neural tissue.
- Organised conference on low-carbon power grid modelling (see <https://twitter.com/OllySmt/status/1481222955631849472>) which brought together physicists and electrical engineers from across Europe to discuss the challenges of controlling low-carbon grids.