

Christoph Ortner

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Appointments & Education

- since 2014 Professor, Warwick Mathematics Institute
- 2011–2014 Associate Professor (Reader), Warwick Mathematics Institute
- 2007–2011 RCUK Academic Fellow, Mathematical Institute, Oxford (permanent)
- 2007–2011 College Lecturer and Research Fellow of Merton College, Oxford
- 2006–2009 Post-doctoral Research Assistant, Mathematical Institute, Oxford
- 2003–2006 D.Phil. in Numerical Analysis, Oxford; Supervisor: Endre Süli
- 2002–2003 M.Sc. in Math. Model. & Sc. Comp., Oxford; Supervisor: Andy Wathen
- 1999–2002 Mathematics in Computer Science, Vienna University of Technology

Areas of Specialization

Mathematics of molecular and multiscale simulation, QM/MM and Atomistic/continuum methods, Crystal defects, Fracture mechanics, Numerical analysis, PDEs, Calculus of variations

Selected Awards and Fellowships

- 2017-2018 Ordway Visiting Professor, University of Minnesota
- 2015 Whitehead Prize, London Mathematical Society
- 2012–2014 Philip Leverhulme Prize, The Leverhulme Trust
- 2006–2007 Worcester College Junior Research Fellowship

Major Research Funding

- 2014–2018 ERC Starting Grant, *Multiscale simulation of crystal defects*
- 2012–2014 EPSRC Standard Grant, *Preconditioners for large-scale atomistic simulations*
- 2010–2013 EPSRC Standard Grant, *Analysis of Atomistic-to-Continuum Coupling Methods*

Postdocs & PhD Students

Julian Braun (2016–), Letif Mones (2015–), Hong Manh Duong (2014–), Huajie Chen (2014–2016, faculty at Peking Normal), David Packwood (2012–2015), Lei Zhang (2010–2012, faculty at Jiaotong University); Maciej Buze (2016–), Simon Etter (2015–), Faizan Nazar (2013–2016), Huan Wu (2013–), Simon Bignold (2012–2016), Thomas Hudson (2010–2014; Zeeman lecturer at Warwick), Hao Wang (2008–2013; faculty at Sichuan University), Bernhard Langwallner (2007–2011), Siobhan Burke (2006–2010)

Representative Publications

<http://tinyurl.com/ortnerpubs>

- [1] *QM/MM methods for crystalline defects. Part 2: Consistent energy and force-mixing*, with H. Chen, to appear in SIAM Multiscale Model. Simul., arXiv:1509.06627
- [2] *Analysis of blended atomistic/continuum hybrid methods*, with X. H. Li, A. Shapeev, and B. Van Koten, Numer. Math. 134, 2016
- [3] *A universal preconditioner for simulating condensed phase materials*, with D. Packwood, J. Kermode, L. Mones, N. Bernstein, J. Wooley, N. Gould and G Csanyi, J. Chem. Phys. 144, 2016
- [4] *An efficient dimer method with preconditioning and linesearch*, with N. Gould and D. Packwood, Math. Comp. 85, 2016
- [5] *Analysis of Boundary Conditions for Crystal Defect Atomistic Simulations*, with V. Ehrlacher and A. V. Shapeev, Arch. Ration. Mech. Anal. 222, 2016
- [6] *(In-)Stability and Stabilisation of QNL-Type Atomistic-to-Continuum Coupling Methods*, with A. Shapeev and L. Zhang, SIAM Multiscale Model. Simul. 12(3), 2014
- [7] *Calculations of crystalline material: from the continuum to the atomistic*, with M. Luskin, Acta Numerica 2013
- [8] *The role of the patch test in 2D atomistic-to-continuum coupling methods*, M2AN 46, 2012
- [9] *Accuracy of the quasicontinuum method near instabilities*, with M. Dobson and M. Luskin, J. Mech. Phys. Solids 58:1741–1757, 2010
- [10] *Nonconforming FE discretization for convex variational problems*, IMA J. Numer. Anal. 31, 2011