

# CV

Jutta Steiner

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Postdoctoral research associate

Department of Applied Mathematics  
École Polytechnique  
Route de Saclay  
91128 Palaiseau Cedex France

Email: [jsteiner@cmap.polytechnique.fr](mailto:jsteiner@cmap.polytechnique.fr)  
Url: <http://www.cmap.polytechnique.fr/~jsteiner>

## Education

University of Bonn, Germany

2007-2011	Doctor rerum naturalium magna cum laude Thesis: <i>The Formation of the Concertina Pattern: Experiments, Analysis, and Numerical Simulations</i> , Adviser: F. Otto
2003-2006	Diploma in Mathematics (equivalent to master) with distinction Thesis: <i>Reduced Models for Thin Ferromagnetic Samples: Analysis and Numerical Simulations</i>
2001-2003	Vordiplom (intermediate exam) in Mathematics and Physics

## Employment history

2011-present	Postdoctoral research associate at the Department of Applied Mathematics, École Polytechnique
2007-2011	Research and teaching assistant, Institute for Applied Mathematics, University of Bonn
2004-2006	Student research assistant, Institute for Applied Mathematics, University of Bonn

## Teaching experience

Fall 2009	Graduate seminar on singular perturbations and $\Gamma$ -convergence with F. Otto
Fall 2008	Graduate seminar on homogenization with F. Otto
Fall 2007	Graduate seminar on interpolation spaces with J. Frehse

## Current research interests

Analysis and simulation of variational and pde models for non-linear, multi-scale phenomena in materials science, in particular phase transitions, hysteresis and energy-driven pattern formation

Rigorous and formal model-reduction techniques, analytical and numerical exploration of energy landscapes, non-linear instabilities

Analytic preconditioners for boundary-element methods for electro-magnetic scattering

## Awards and academic honors

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| 2011      | Ada-Lovelace-Prize, Institute for Numerical Simulations, University of Bonn, for an outstanding doctoral thesis in the field of numerical simulations by a woman |
| 2007      | Valedictory speaker at the central graduation ceremony to represent the graduating students of the academic year 2006-2007, University of Bonn                   |
| 2001-2006 | Scholarship by the German National Academic Foundation   |

## Articles in peer-reviewed journals

- [Ste+11] J. Steiner, H. Wiecek, R. Schäfer, J. McCord, and F. Otto. “The formation and coarsening of the concertina pattern.” 2011. Accepted Phys. Rev. B. URL: <http://arxiv.org/abs/1106.3573v1>.
- [AFS10] F. Alouges, S. Faure, and J. Steiner. “The vortex core structure inside spherical ferromagnetic particles.” In: *Discrete And Continuous Dynamical Systems A* 27.4 (2010), pp. 1259–1282. URL: <http://aimsciences.org/journals/displayArticles.jsp?paperID=5026>.
- [LoB+10] M. LoBue, F. Mazaleyrat, M. Ammar, R. Barrué, Y. Champion, S. Faure, M. Hÿtch, E. Snoeck, J. Steiner, and F. Alouges. “Observation and modelling of magnetic vortex core structure in Permalloy nanoparticles.” In: *Journal of Magnetism and Magnetic Materials* 322.9-12 (May 2010), pp. 1290–1292. URL: <http://adsabs.harvard.edu/abs/2010JMMM...322.1290L>.
- [OS10] F. Otto and J. Steiner. “The concertina pattern: From micromagnetics to domain theory.” In: *Calculus of Variations and Partial Differential Equations* 39 (1 2010). 10.1007/s00526-009-0305-7, pp. 139–181. URL: <http://www.springerlink.com/content/p262014214q24050/fulltext.pdf>.
- [CÁOS07] R. Cantero-Álvarez, F. Otto, and J. Steiner. “The concertina pattern: a bifurcation in ferromagnetic thin films.” In: *J. Nonlinear Sci.* 17.3 (2007), pp. 221–281. URL: <http://www.springerlink.com/content/92m21h7842710350/fulltext.pdf>.

## Preprints

- [Ste08] J. Steiner. “Compactness for the asymmetric Bloch wall.” In: *SFB Preprint* 372 (2008). URL: <http://sfb611.iam.uni-bonn.de/uploads/374-komplett.pdf>.

## Theses

- [Ste10] J. Steiner. “The formation of the concertina pattern: Experiments, analysis, and numerical simulations.” 2010, Doctoral thesis. URL: <http://hss.ulb.uni-bonn.de/2011/2618/2618.pdf>.
- [Ste06] J. Steiner. “Reduzierte Modelle für dünne ferromagnetische Filme: Analysis und Numerik.” 2006, Diploma thesis, University of Bonn.

## Research visits

02-05/2008 | Université Paris-Sud 11, Orsay, France

## Invited conference and workshop talks

03/2007 | Marie Curie Research Training Network Meeting “Multi-scale modeling and characterization for phase transformations in advanced materials”, Prague, Czech Republic  
05/2008 | SIAM Conference on Mathematical Aspects of Materials Science, Minisymposium: Micro-magnetism – Modeling, Analysis and Computation, Philadelphia, USA  
09/2009 | European Congress on Advanced Materials, Minisymposium: Hard and Soft Magnets, Glasgow, Scotland  
06/2010 | Workshop “Applied Mathematics and Calculus of Variations”, La Sapienza, Rome, Italy  
05/2011 | Conference “Hysteresis Modeling and Micromagnetics”, Levico, Italy  
09/2011 | OxMOS & PIRE workshop “Pattern Formation and Multiscale Phenomena in Materials”, Oxford, England

## Colloquia and research seminars

05/2008 | Université Paris Sud 11, France, Numerical Mathematics Seminar  
02/2010 | Freie Universität Berlin, Germany, Numerical Mathematics Seminar  
05/2010 | ETH Zurich, Swiss, Applied Mathematics Colloquium  
11/2010 | Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany, Analysis Seminar  
11/2011 | École Polytechnique, Palaiseau, France, Applied Mathematics Colloquium

## Participation in conferences, workshops and summer schools

07/2007 | Summer school, Topics in Nonlinear PDEs, Coimbra, Portugal  
05/2008 | SMAI Congrès d’Analyse Numérique, Saint Jean de Monts, France  
06/2010 | Conference on Sparsity and Computation, HCM Bonn, Germany  
06/2011 | Summer school, Analysis and Applied Mathematics, La Sapienza, Rome, Italy  
07/2011 | Summer School, Multiscale Coupling of Complex Models, CIRM Marseille, France

## Further experiences and skills

Mentoring | Workshop for high-school students, to gain insights into mathematical undergraduate studies and future perspectives  
Programming | C, Fortran, Matlab, PETSc  
Languages | English (fluent), French (very good knowledge), German (mother tongue), Russian (basic knowledge)