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## PROFESSIONAL PREPARATION

University of Valencia, Spain	Mathematics	B.S. 1994
Courant Institute, New York University	Mathematics	Ph.D. 1999

## APPOINTMENTS

University of California, Santa Barbara	Vice-Chair	2009-Present
University of California, Santa Barbara	Professor	2009-Present
University of California, Santa Barbara	Associate Professor	2007-2009
University of California, Santa Barbara	Assistant Professor	2001-2007
Princeton University	Instructor	1999-2001

## VISITING POSITIONS

1. Visiting Professor, Morningside Center of Mathematics (Chinese Academy of Sciences), Beijing, China, July 2000. *Workshop title:* Magnetic Domains and Magnetic Domain Walls.
2. Professor Visitant, Universitat de València, Spain, June-August 2003. *Host:* Prof. Rosa Donat.
3. Visiting Professor, Hong Kong University of Science and Technology, July 2004. *Host:* Prof. Xiao-Ping Wang.
4. Visiting Professor, Universidad del País Vasco, Bilbao, Spain, June-July 2005. *Host:* Prof. Luis Vega González.
5. Visiting Professor, Hong Kong University of Science and Technology, July 2005. *Host:* Prof. Xiao-Ping Wang.
6. Visiting Professor, Universidad del País Vasco, Bilbao, Spain, June 2006. *Host:* Prof. Luis Vega González.
7. Visiting Professor, Princeton University, April-July 2007. *Host:* Prof. Weinan E.
8. Long Term Visitor, Institute for Mathematics And Applications, September-December 2008. Special Program: *Mathematics and Chemistry*.
9. Visiting Professor, Fudan University, Changhai, China, July 2010. *Host:* Prof. Weiguo Gao.

## FELLOWSHIPS AND AWARDS

<b>CAREER Award,</b> National Science Foundation	August 2007-2012
<b>Alfred P. Sloan Doctoral Dissertation Fellowship,</b> Suite 2550, 630 Fifth Avenue, New York, NY 10111	June 1997–Sept. 1998
<b>Harold Grad Memorial Prize,</b> For outstanding performance and promise as a graduate student, Courant Institute, New York University.	May 1996
<b>Fellowship given by The Bank of Spain,</b> Apdo. 15, 28080 Madrid, Spain	June 1995–June 1997
<b>“La Caixa” Fellowship,</b> sponsored in the U.S.A by Indiana University	Sept. 1994–June 1995

## GRANTS

1. *IGERT: Development of a Graduate Education Program in Computational Science and Engineering with Emphasis on Multiscale Problems in Fluids and Materials*, NSF Grant **DGE02-21715**. Award Period: 07/01/02-06/30/07. Total Award Amount: \$2,684,749. Principal Investigator: Prof. Linda Petzold (Mechanical Engineering and Computer Science, UCSB).
2. *Analysis of Spin Polarized Transfer and Micro-Macro Theories for Polymers and Liquid Crystals*, NSF Grant **DMS-0505738**. Total Award Amount: \$97,402. Award Period: 08/05-07/08.
3. *Simulation of Block Copolymer Assembly for Nanoscale Lithography*, FENA Grant. Total Award Amount: \$50,000. Award Period: 04/06-08/06. Co-Pi with Prof. Glenn H. Fredrickson (Materials Research Laboratory, UCSB).
4. *Simulation of Block Copolymer Assembly for Nanoscale Lithography*, FENA Grant. Total Award Amount: \$300,000. Award Period: 09/06-08/09. Co-Pi with Prof. Glenn H. Fredrickson (Materials Research Laboratory, UCSB).
5. *CAREER: Multilevel Physics in the Study of Solids: Modeling, Analysis and Simulations*, NSF Grant **DMS-0645766**. Total Award Amount: \$400,000. Award Period: 08/15/2007-08/14/2012.
6. *Mathematical Study of Smectic Liquid Crystals*, NSF Grant **DMS-0908538**. Total Award Amount: \$101,645. Award Period: 09/2009-08/2012.
7. *SOLAR: Development of Methods to Predict Phase Separation and Charge Transport in Bulk Heterojunction Conjugated Polymer Solar Cells*, NSF Grant **DMS-1035480**. Total Award Amount: \$1,350,000. Award Period: 09/01/2010-08/31/2013.
8. *Simulation of Block Copolymer Assembly for Nanoscale Lithography*, FENA Grant. Total Award Amount: \$914,860. Award Period: 08/2009-08/2012. Co-Pi with Prof. Glenn H. Fredrickson, Prof. Edward Kramer and Prof. Craig Hawker (Materials Research Laboratory, UCSB).
9. *FRG: Collaborative Research: Dynamical Processes in Many-Body Systems: Analysis and Simulations*, NSF Grant **DMS-1065942**. Total Award Amount: \$1,470,633. Award Period: 08/2011-08/2014. Co-Pi with Prof. Roberto Car (Chemistry, Princeton U.), Prof. Weinan E (Mathematics, Princeton U.), and Prof. Emil V. Prodan (Physics, Yeshiva U.).
10. *MRI-R2: Acquisition of a high performance central computing facility at UCSB*, NSF Grant **DMS-0960316**. Total Award Amount: \$665,000. Award Period: 05/2010-04/2013. Co-PI with Prof. Frank Brown (PI, Chemistry, UCSB), Prof. John Gilbert (Computer Science, UCSB), Prof. Glenn Fredrickson (Materials Research Laboratory, UCSB), and Prof. Christian Van de Walle (Materials, UCSB).

## PUBLICATIONS

### Micromagnetics

1. **Effective Dynamics in Ferromagnetic Thin Films**, C.J. García-Cervera and W. E, *J. Appl. Phys.* **90**, pp. 370-374, 2001
2. **A Gauss-Seidel Projection Method for the Landau-Lifshitz equations**, X.P. Wang, C.J. García-Cervera, and W. E, *J. Comp. Phys.* **171**, pp. 357-372, 2001.
3. **Accurate Numerical Methods for Micromagnetics Simulations with General Geometries**, C.J. García-Cervera, Z. Gimbutas, and W. E, *J. Comp. Phys.*, **184**, 1, pp. 37-52, 2003.
4. **Improved Gauss-Seidel Projection Method for Micromagnetics Simulations**, C.J. García-Cervera and W. E, *IEEE Trans. Magn.*, **39**, 3, pp. 1766-1770, 2003.
5. **One-Dimensional Magnetic Domain Walls**, *Euro. J. Appl. Math.*, **15**, pp. 451-486, 2004.
6. **Néel Walls in Low Anisotropy Double Layers**, *SIAM J. Appl. Math.*, **65**, pp. 1726-1747, 2005.
7. **Structure of the Bloch Wall in Multilayers**, *Proc. R. Soc. A*, **461**, pp. 1911-1926, 2005.
8. **Magnetic Switching of Thin Films under Thermal Perturbation**, D. Liu, and C.J. García-Cervera, *J. Appl. Physics*, **98**, 023903, 2005.
9. **Thermal activation in Permalloy nanorectangles at room temperature**, E. Martinez, L. Lopez-Diaz, L. Torres and C.J. García-Cervera, *Physica B*, **372**, pp. 286-289, 2006.
10. **Adaptive Mesh Refinement for Micromagnetics Simulations**, C.J. García-Cervera, and A. Roma, *IEEE Trans. Mag*, **42**, pp. 1648-1654, 2006.
11. **Spin-Polarized Transport: Existence of Weak Solutions**, C.J. García-Cervera, and X.P. Wang, *Discrete and Continuous Dynamical Systems B*, **7**(1), pp. 87-100, 2007.
12. **Advances in Numerical Micromagnetics: Spin-Polarized Transport**, *Bol. Soc. Esp. Matem. Apl.*, **34**, pp. 217-221, 2006.
13. **Spin-Polarized Currents in Ferromagnetic Multilayers**, C.J. García-Cervera, and X.P. Wang, *J. Comp. Phys.*, **224**(2), pp. 699-711, 2007.
14. **Micromagnetics simulations with thermal noise: physical and numerical aspects**, E. Martinez, L. Lopez-Diaz, L. Torres and C.J. García-Cervera, *J. Magn. Mag. Mat.*, **316**, pp. 269-272, 2007.
15. **Minimizing Cell Size Dependence in Micromagnetics Simulations with Thermal Noise**, E. Martinez, L. Lopez-Diaz, L. Torres and C.J. García-Cervera, *J. Physics D: Appl. Phys.*, **40**(4), pp. 942-948, 2007.
16. **Numerical Micromagnetics: A Review**, *Bol. Soc. Esp. Matem. Apl.*, **39**, pp. 103-135, 2007.
17. **A numerical study of the self-similar solutions of the Schrödinger Map**, F. De La Hoz, C.J. García-Cervera and L. Vega, *SIAM J. Appl. Math*, **70**(4), pp. 1047-1077, 2009.

### Liquid Crystals and Polymers

1. **Computational studies of the shear flow behaviour of a model for nematic liquid crystalline polymers**, D.H. Klein, C.J. García-Cervera, H.D. Ceniceros, and L.G. Leal, *ANZIAM J.*, **46**, C210-C244, 2005.
2. **Stability of the Gyroid Phase in Diblock Copolymers at Strong Segregation**, E.W. Cochran, C.J. García-Cervera, and G.H. Fredrickson, *Macromolecules*, **39**(7), pp. 2449-2451, 2006.
3. **Ericksen number and Deborah number cascade predictions of a model for liquid crystalline polymers for simple shear flow**, D.H. Klein, G. Leal, C.J. García-Cervera, and H.D. Ceniceros, *Physics of Fluids*, **19**, pp. 023101, 2007.

4. **Defects and their removal in block copolymer thin film simulations**, A.W. Bosse, S.W. Sides, K.Katsov, C.J. García-Cervera, and G.H. Fredrickson, *Journal of Polymer Science Part B: Polymer Physics*, **44**, pp. 2495–2511, 2006.
5. **Self-consistent field theory simulations of block copolymer assembly on a sphere**, T.L. Chantawansri, A.W. Bosse, A. Hexemer, H.D. Cenicerros, C.J. García-Cervera, E.J. Kramer, and G.H. Fredrickson, *Physical Review E*, **75**, 031802, 2007.
6. **Microdomain ordering in laterally confined block copolymer thin films**, A.W. Bosse, C.J. García-Cervera, and G.H. Fredrickson, *Macromolecules*, **40**, pp. 9570-9581, 2007.
7. **Numerical Solutions of the Complex Langevin Equations in Polymer Field Theory**, E.M. Lennon, G.O. Mohler, H.D. Cenicerros, C.J. García-Cervera, and G.H. Fredrickson, *Multiscale Modeling and Simulation*, **6(4)**, pp. 1347-1370, 2008.
8. **Three-dimensional shear driven dynamics of polydomain textures and disclination loops in liquid crystalline polymers**, D.H. Klein, C.J. García-Cervera, H.D. Cenicerros, and L.G. Leal, *Journal of Rheology*, **52**, pp. 837-863, 2008.
9. **Geometric strong segregation theory for compositionally asymmetric diblock copolymer melts**, C.B. Muratov, M. Novaga, G. Orlandi, and C.J. García-Cervera, in *'Singularities in non-linear evolution phenomena and applications*, CRM Series, Birkhauser, 2009.
10. **SCFT Simulations of Thin Film Blends of Block Copolymer and Homopolymer Laterally Confined in a Square Well**, S. Hur, C.J. García-Cervera, E. Kramer, and G.H. Fredrickson, *Macromolecules*, **42(15)**, pp. 5861–5872, 2009.
11. **Analytic description of layer undulations in smectic A liquid crystals**, C.J. García-Cervera, and S. Joo, *Journal of Theoretical and Computational Nanosciences*, **7(4)**, pp. 795-801, 2009.
12. **Spectral collocation methods for polymer brushes**, T. Chantawansri, S.-M. Hur, C.J. García-Cervera, E. Kramer, and G.H. Fredrickson, *J. Chem. Phys.*, **134**, 244905 (2011).
13. **Analytic description of layer undulations in smectic A liquid crystals**, C.J. García-Cervera and S. Joo, *Arch. Rat. Mech. Anal.*, *in press* (2011).

#### Density Functional Theory

1. **An Efficient Real Space Method for Orbital-Free Density-Functional Theory**, *Communications in Computational Physics*, **2 (2)**, pp. 334–347, 2007.
2. **Asymptotics-based sub-linear scaling algorithms and application to the study of the electronic structure of materials**, C.J. García-Cervera, J. Lu, and W. E, *Communications in Mathematical Sciences*, **5(4)**, pp.999-1026, 2007.
3. **A remark on 'An Efficient Real Space Method for Orbital-Free Density Functional Theory'**, C.J. García-Cervera, *Comm. Comp. Phys.*, **3(4)**, pp. 968-872, 2008.
4. **A Linear Scaling Subspace Iteration Algorithm with Optimally Localized Non-Orthogonal Wave Functions for Kohn-Sham Density Functional Theory**, C.J. García-Cervera, J. Lu, Y. Xuan, and W. E, *Phys. Rev. B*, **79 (11)**, 115110, 2009.

#### Miscellaneous

1. **Sequential multiscale modeling using sparse representation**, C.J. García-Cervera, W. Ren, J. Lu, and W. E, *Comm. Comp. Phys.*, **4(5)**, pp. 1025–1033, 2008.
2. **A Density Gradient Corrected Embedded Atom Method**, G. Wu, W. Lu, C.J. García-Cervera, and W. E, *Phys. Rev. B*, **79**, 035124, 2009.

#### BOOKS EDITED

1. **Advances in Materials Modeling: Analysis and Simulations**, *Special Issue of Discrete and Continuous Dynamical Systems, Series B*, **Volume 6**, Number 2, 2006.

#### **PROFESSIONAL MEMBERSHIPS**

1. American Mathematical Society (AMS).
2. Society for Industrial and Applied Mathematics (SIAM).
3. Sociedad Española de Matemática Aplicada (Spanish Society for Applied Mathematics).
4. American Chemical Society.

#### **GRADUATE STUDENTS SUPERVISED**

1. August W. Bosse, Physics Department. Co-advised with Prof. Glenn H. Fredrickson. Ph.D. degree obtained in October 2006.
2. Tanya Chantawansri, Chemical Engineering. Co-advised with Prof. Glenn H. Fredrickson and Prof. H.D. Cenicerros. Ph.D. degree expected in 2008.
3. Su-Mi Hur, Chemical Engineering. Co-advised with Prof. Glenn H. Fredrickson. Ph.D. degree expected in 2011.
4. D. Harley Klein, Chemical Engineering. Co-advised with Prof. L.G. Leal and Prof. H.D. Cenicerros. Ph.D. degree obtained in June 2006.
5. Erin Lennon, Chemical Engineering. Co-advised with Prof. Glenn H. Fredrickson and Prof. H.D. Cenicerros. Ph.D. degree obtained in 2008.
6. Jiawei Qi, Mathematics. Ph.D. degree obtained in 2008.

#### **POST-DOCTORAL FELLOWS SUPERVISED**

1. Dr. Matthew Mata, Mathematics Department, Ph.D. from UCLA.
2. Dr. Jingrun Chen, Mathematics Department, Ph.D. from Chinese Academy of Sciences.
3. Dr. Sookyung Joo, Mathematics Department, Ph.D. from Purdue University.
4. Dr. Yulin Xuan, Mathematics Department, Ph.D. from Princeton University.