Xiaoyu Zheng

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PRESENT POSITION Associate professor, Kent State University, August 2012 - present

PAST APPOINTMENTS Assistant professor, Kent State University, August 2006 - July 2012

EDUCATION

Ph.D. in Applied Mathematics, May 2006
University of North Carolina at Chapel Hill, Chapel Hill, NC
Adviser: Professor M. Gregory Forest

M.S. in Mathematics, July 2001
Jilin University, Changchun, China

B.S. in Mathematics, July 1999
Jilin University, Changchun, China

RESEARCH INTERESTS

- Math Modeling of Elastic Materials
- Math Modeling and Numerical Simulations of Liquid Crystals

GRANTS

- NSF DMS-0807954, 07/01/2008-07/01/2011, PI
- NSF DMS-0821071 SCREMS, by 09/01/2009, CO-PI
- NSF DMS-0908470 SGER, 10/01/2009-10/01/2011,CO-PI
- NSF DMS-1212046, 10/01/2012-09/31/2015, PI
- NSF DMR-1620095, Conference Support, co-PI

PUBLICATIONS

1. P. Palffy-Muhoray, E.G. Virga, M. Wilkinson, and **X. Zheng**, *On a paradox in the impact dynamics of smooth rigid bodies*, submitted (2017)
2. P. Palffy-Muhoray, E.G. Virga, and **X. Zheng**, *Onsager's missing steps retraced* , J. of Phys: Condensed Matter, **29**, 475102 (2017)
3. E.S. Nascimento, P. Palffy-Muhoray, J. M. Taylor, E.G. Virga, and **X. Zheng**, *Density functional theory for dense nematics with steric interactions*, Phys. Rev. E, **96**, 022704 (2017)
4. S.D. Ryan, G.P. Richards, **X. Zheng** and P. Palffy-Muhoray,*A finite volume method for computing flow induced orientation of nematic liquid crystals*, Molecular Crystals and Liquid Crystals, **647**(1), 207–215 (2017)
5. M. Pevnyi, M. Moreira-Fontana, G.P. Richards, **X. Zheng** and Peter Palffy-Muhoray, *Studies of photo-thermal deformations of liquid crystal elastomers under local illumination*, Molecular Crystals and Liquid Crystals, **647**(1), 228-234 (2017)
6. S.D. Ryan, **X. Zheng**, and P. Palffy-Muhoray, *Curvature driven foam coarsening on a sphere: A computer simulation*, Phys. Rev. E, **93**, 053301 (2016)
7. F. Meng, M. Doi, Z. Ouyang, **X. Zheng**, P. Palffy-Muhoray, *The Coin-Through-the-Rubber Trick: An Elastically Stabilized Invagination*, J. Elast. DOI 10.1007/s10659-015-9546-1 (2015)

8. **X. Zheng**, and P. Palffy-Muhoray, *Electrical energy storage and dissipation in materials*, Physics Letters A, **379**, 1853-1856 (2015)
9. P. Palffy-Muhoray, M. Pevnyi, E. Virga, and **X. Zheng** *The Effects of Particle Shape in Orientationally Ordered Soft Materials*, IAS/Park City Mathematics Series, **23**, 203–253 (2014)
10. P. Palffy-Muhoray, E. G. Virga, and **X. Zheng**, *The minimum excluded volume of convex shapes*, J. Phys. A: Math. Theor. **47**, 415205 (2014)
11. Peter Palffy-Muhoray, Yijing Chen, Hiroshi Yokoyama, and **Xiaoyu Zheng**, *Dimensional Analysis and the Time Required to Urinate*, arXiv, March, (2014)
12. **X. Zheng**, J. Fontana, M. Pevnyi, M. Ignatenko, S. Wang, R. Vaia, P. Palffy-Muhoray, *The effects of nanoparticle shape and orientation on the low frequency dielectric properties of nanocomposites*, Journal of Materials Science, **47**, 4914-4920 (2012)
13. **X. Zheng**, R. Ennis, G. P. Richards, P. Palffy-Muhoray, *A Plane Sweep Algorithm for the Voronoi Tessellation of the Sphere*, electronic-Liquid Crystal Communications, (2011)
14. **X. Zheng**, P. Palffy-Muhoray, *Maier-Saupe theory in four dimensions*, Phys. Rev. E, **83**, 041702, (2011)
15. **X. Zheng**, P. Palffy-Muhoray, *One order parameter tensor mean field theory for biaxial liquid crystals*, Discrete and Continuous Dynamical Systems-Series B, **15** (2), 475-490 (2010)
16. E. P. Choate, M. G. Forest, L. Yao, **X. Zheng**, and R. Zhou, *A Simple Model for Non-Topological Defects in Sheared Nematic Polymer Monodomains*, Journal of Computational and Theoretical Nanoscience, **7**(4), 787-794, (2010)
17. A. Haji-Akbari, M. Engel, A. S. Keys, **X. Zheng**, R. G. Petschek, P. Palffy-Muhoray, S. C. Glotzer, *Disordered, quasicrystalline and crystalline phases of densely packed tetrahedra*, Nature, **462**, 773-777 (2009)
18. **X. Zheng**, W. Iglesias, P. Palffy-Muhoray, *Distance of closest approach of two arbitrary hard ellipsoids*, Phys. Rev. E, **79**, 057702(2009)
19. **X. Zheng**, M. G. Forest, R. A. Vaia, M. Arlen, R. Zhou, *A strategy for dimensional percolation in sheared nanorod dispersions*, Advanced Mater., **19**(22), 4038-4043(2007)
20. **X. Zheng**, P. Palffy-Muhoray, *Eigenvalue decomposition for tensors of arbitrary rank*, electronic-Liquid Crystal Communications, (2007)
21. **X. Zheng**, P. Palffy-Muhoray, *Distance of closest approach of two arbitrary hard ellipses in two dimensions*, Phys. Rev. E, **75**, 061709 (2007)
22. **X. Zheng**, M. G. Forest, R. Lipton, R. Zhou, *Nematic polymer mechanics: flow-induced anisotropy*, Continuum Mechanics and Thermodynamics, **18**, 377-394 (2007)
23. M. G. Forest, **X. Zheng**, R. Zhou, Q. Wang, R. Lipton, *Anisotropy and dynamic ranges in electrical properties of sheared nematic polymer nano-composites*, Advanced Functional Materials, **15**(12), 2029-2035(2005)
24. **X. Zheng**, M. G. Forest, R. Lipton, R. Zhou, Q. Wang, *Exact scaling laws for electrical conductivity properties of nematic polymer nano-composite monodomains*, Advanced Functional Materials, **15**(4), 627-638 (2005)
25. M. G. Forest, R. Zhou, Q. Wang, **X. Zheng**, R. Lipton, *Anisotropy and heterogeneity of nematic polymer nano-composite film properties*, IMA volumes in Mathematics and its Applications, "Modeling of soft matter", **141**, 85-98 (2005)
26. H. Zhou, M. G. Forest, **X. Zheng**, Q. Wang, R. Lipton, *Extension-enhanced conductivity of liquid crystalline polymer nano-composites*, Macromolecular Symposia, **288**(1), 81-90 (2005)

27. **X. Zheng**, M. G. Forest, R. Zhou, Q. Wang, *Likelihood & expected-time statistics of monodomain attractors in sheared discotic and rod-like nematic polymers*, Rheologica Acta, **44**(3), 219-234 (2005)

28. H. Yuan, **X. Zheng**, *Existence and uniqueness for a quasilinear hyperbolic equation with σ-finite Borel measures as initial conditions*, Journal of Mathematical Analysis and Applications, **277**(1), 27–50 (2003)