

# APARNA BASKARAN

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## Personal Information:

Date of Birth: 12 May 1979.

Country of Citizenship: India.

## Education:

- 1. PhD (Physics):** Department of Physics, University of Florida.  
Chair of Supervisory Committee: Professor James W. Dufty.  
**Thesis Topic:** *Statistical Mechanics and Linear Response for Granular Fluids*
- 2. Master of Science (Physics):** Raman School of Physics Pondicherry University.  
(An integrated 5-year M.Sc. Program with the equivalent of an Undergraduate Triple Major in Physics, Mathematics and Chemistry and a Postgraduate Degree in Physics with a Mathematics minor).  
**Thesis Topic:** *Quantum Computing: Implementing an EVQC using NMR*

## Employment:

1. Teaching Assistant, Department of Physics, University of Florida, August 2001-December 2001.
2. Research Assistant, Department of Physics, University of Florida, January 2002-April 2006.
3. Post doctoral research associate, Department of Physics, University of Florida, May 2006-August 2006.
4. Post doctoral research associate, Physics Department, Syracuse University, August 2006-Present.

## Publications:

1. "Gaussian Kinetic Model for Granular Gases", J. W. Dufty, A. Baskaran, and L. Zogaib, *Phys. Rev. E* **69**, 051301; [cond-mat/0312113](#).
2. "Hydrodynamics for a Granular Gas from Exactly Solvable Kinetic Models", A. Baskaran and J. W. Dufty, in *Modeling and Numerics of Kinetic Dissipative Systems*, editors L. Pareschi, G. Russo, G. Toscani, (Nova Science, NY, 2006); [cond-mat/0410084](#).
3. "Hard Sphere Dynamics for Normal and Granular Fluids", J. W. Dufty and A. Baskaran, in *Nonlinear Dynamics in Astronomy and Physics*, S. Gottesman ed., *Annals of the New York Academy of Sciences* **1045** (2005); [cond-matt/0503180](#).

4. “Linear Response for a Granular Fluid”, J. W. Dufty, A. Baskaran, J. J. Brey, J. Stat. Mech. (2006) L08002; [cond-mat/0507609](#).
5. “Linear Response and hydrodynamics for a granular fluid”, A. Baskaran, J. W. Dufty, J. J. Brey, Phys. Rev. E **77**, 031310 (2008); [cond-mat/0612408](#)
6. “Transport Coefficients of a hard sphere granular fluid”, A. Baskaran, J. W. Dufty, J. J. Brey Phys. Rev. E **77**, 031311 (2008); [cond-mat/0612409](#)
7. “Kinetic theory of response functions of the hard sphere granular fluid” A. Baskaran, J. W. Dufty, J. J. Brey, J. Stat. Mech. (2007) P12002; [arXiv:0708.0678](#).
8. “Hydrodynamics of self propelled hard rods”, A. Baskaran and M. C. Marchetti Phys. Rev. E **77**, 011920 (2008); [arXiv:0708.2401](#)
9. “Isotropic Cholesteric transition of a weakly chiral elastomer cylinder”, X. Xing and A. Baskaran, (submitted to PRE); [arXiv:0801.3661](#)
10. “A Physical Mechanism for Enhanced Order in Active Nematics”, A. Baskaran and M. C. Marchetti (In preparation April 2008).
11. “Elasticity of chiral nematic elastomers”, A. Baskaran and X. Xing (In preparation April 2008).

### Oral Presentations:

1. “A New Kinetic Model for Granular Gases”, **invited** seminar, University of Seville, Spain, September 2003.
2. “An Improved kinetic model for granular gases”, **invited** seminar, Florida – Paris Workshop on Granular Fluids, Paris, France, November 2003.
3. “Hydrodynamics for a Granular Gas from Exactly Solvable Kinetic Models”, contributed seminar, Workshop on Modeling and Numerics of Kinetic Dissipative Systems, Lipari, Italy, May 2004.
4. “Fluctuations and Response for a Granular Fluid”, contributed talk, StatPhys **22**, Bangalore, India, July 2004.
5. “Green-Kubo Expressions for Transport in a Granular Fluid”, contributed talk, SESAPS meeting, November 2004.
6. “Application of the methods of non equilibrium statistical mechanics to granular fluids”, invited seminar, DuftyFest, Department of Physics, University of Florida, September 2005.
7. “Approximate evaluation of the Green-Kubo expression of the shear viscosity of a granular fluid”, SESAPS meeting, November 2005.
8. “Statistical Mechanics and hydrodynamics of a granular fluid”, **invited** seminar, Department of Physics, Syracuse University, February 2006, University of British Columbia, Vancouver, Canada, March 2006.
9. “Hydrodynamics of Self propelled hard particles”, contributed talk, APS March meeting, Denver, CO, 2007.
10. “Effect of Fluctuations on the elasticity of nematic elastomers”, contributed talk, APS March meeting, Denver, CO, 2007.
11. “Kinetic theory of hydrodynamic response functions”, contributed talk, APS March meeting, Denver CO, 2007.
12. “Understanding the hydrodynamics of dense granular fluids”, **invited** talk, *Granular fluids: A proving ground for Nonequilibrium Statistical Mechanics*, Sevilla, Spain September 2007.
13. “Elasticity of a chiral elastomer”, contributed talk, APS March meeting New Orleans, LA, 2008

## Poster Presentations:

1. "Radiative and Transport Properties of Ions in a Complex Environment", A. Baskaran, J. Wrighton, and J. Dufty, International Conference on Strongly Coupled Coulomb Systems, Santa Fe, NM, September 2002.
2. "A Practical Kinetic Theory for granular gases", A. Baskaran, J. Dufty, and L. Zogaib, American Physical Society meeting, Montreal, Canada, March 2004.
3. "Linear response and hydrodynamics for a granular fluid", A. Baskaran, J. Dufty, J. J. Brey, Gordon Research Conference on Nonlinear Science, June 2005.
4. "Hydrodynamics of Self-propelled particles", A. Baskaran and M. C. Marchetti, CNLS conference on Complexity of Biological and Soft Materials, Santa Fe, NM, May 2007.
5. "On the Elasticity of a Chiral Elastomer", A. Baskaran and X. Xing, Gordon Research Conference on Nonlinear Science, June 2007.

## Other Professional Activity:

- Member, American Physical Society.
- Member, American Association for the Advancement of Science.
- Visiting Student Research Associate, Tata Institute of Fundamental Research, Bombay, India. Summer 2000
- Visiting Research Associate, University of Seville, Spain Fall 2003. Worked on thesis related topics with J. J. Brey and his group.
- Co-organizer of Workshop on Granular Gases, Paris, France (20 participants from six countries, two days of seminars).
- Invited Participant in the *Granular Physics* program at the Kavli Institute, Santa Barbara, May and June, 2005.
- Organizer, Graduate Student Seminar Forum, Department of Physics, University of Florida, Fall 2005.
- Co-organizer of "Duftyfest" - A symposium to celebrate Jim Dufty's 65<sup>th</sup> birthday (30 participants from 5 countries).
- Graduate Student Mentor, Female Physics Forum, University of Florida, Fall 2005 and Spring 2006.
- Participant in The Boulder School on condensed matter and material physics, June 2006.
- Series Director, Condensed Matter and Biological Physics Seminar, Physics Department, Syracuse University, Fall 2007 and Spring 2008

## Awards:

- Gold Medalist, Class of 2001, Integrated M. Sc. Program, Pondicherry University.
- Outstanding Academic Achievement by an International Student, CLAS, University of Florida, Year of 2004 (4 awards in the College).
- NSF Travel Award for participation at StatPhys22, April 2004 (20 awards nationally).

- College of Liberal Arts and Sciences, University of Florida, travel awards, Fall 2003, Fall 2004.
- Winner of McGinty Dissertation Fellowship, College of Liberal Arts and Sciences, University of Florida, Spring 2006.
- Institute of Fundamental Theory, University of Florida, J. Michael Harris Award, Spring 2006.
- Charles Hooper Memorial Award for excellence in teaching and research, Department of Physics, University of Florida, Spring 2006.
- Recipient of the Alec Courtelis Award for the year 2006, for academic excellence and service to the university community.
- Travel award, Los Alamos National Laboratory, for participation in the CNLS workshop on Biological and Soft Materials, May 2007.
- Chair's discretionary funding, Gordon Research Conference on Nonlinear Science, June 2007.

### **Professional Aptitude Examinations (India):**

- Graduate Aptitude Test for Engineers (GATE) 2001 – All India Rank 14. (A standardized examination conducted by the Indian Institutes of Technology and Indian Institute of Science, Bangalore).
- UGC – CSIR NET qualified 2001. (Lectureship Eligibility test conducted by the University Grants Commission of India).

### **Teaching:**

- Introductory Physics 1 Lab: First level mechanics laboratory course (UF course # PHY 2048L), Fall 2001.
- Stand in Lecturer for Thermal Physics (UF course # PHY 3513): 5 lectures, Fall 2004.
- Stand in Lecturer for Statistical Mechanics (UF course # PHY 6538): 4 lectures, Spring 2005.
- Stand in Lecturer for Solid State Physics: 4 lectures (Syracuse University Graduate course), Fall 2006.