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Education:

1. **PhD (Physics):** Department of Physics, University of Florida.
2. **Master of Science (Physics):** Raman School of Physics Pondicherry University.

Employment:

1. Associate Professor, Department of Physics, Brandeis University April 2017-Present
2. Assistant Professor, Department of Physics, Brandeis University 2010- 2017
3. Post doctoral research associate, Physics Department, Syracuse University, August 2006-July 2010.

Publications:

45. "Response of active Brownian particles to boundary driving", C. G. Wagner, M. F. Hagan and A. Baskaran, **arXiv:1905.12706** (submitted).
44. "Re-enterant efficiency of phototaxis in Chlamydomonas reinhardtii cells", Sujeet Kumar Choudhary, Aparna Baskaran, Prerna Sharma, **arXiv:1904.09200** (submitted)
43. "Conformational switching of chiral colloidal rafts regulates raft-raft attractions and repulsions", Joia Miller, Chaitanya Joshi, Prerna Sharma, Aparna Baskaran, Gregory M. Grason,Michael F. Hagan, Zvonimir Dogic, **arXiv:1902.03341** (PNAS in press, July 2019).
42. "Active Self-Organization of Actin-Microtubule Composite Self-Propelled Rods" L Farhadi, C Fermino Do Rosario, E Debold, A Baskaran, JL Ross, Frontiers in Physics 6, 75 (2018).
41. "Interplay between activity and filament flexibility determines emergent properties of active nematics" A. Joshi, E. Putzig, A. Baskaran and M. F. Hagan ***Soft Matter***,**15**, 94-101 (2019) arXiv: 1711.05714.
40. "Noise and diffusion of a vibrated self propelled particle", L. Walsh, C. G. Wagner, S. Scholssberg, C. Olsen, A. Baskaran and N. Menon, Soft Matter **13**, 8964-8968 (2017)
39. "Insensitivity of active nematic dynamics to topological constraints", M. Norton, A. Baskaran, A. Opathalage, B. Langeslay, S. Fraden, M. F. Hagan and A. Baskaran, Phys. Rev E **97**, 012702 (2018)
38. "Statistical Mechanics and Hydrodynamics of Self-Propelled Hard Spheres", B. Hancock and A. Baskaran JSTAT 033205 (2017) arXiv:1701.03450
37. "Equilibrium mappings in polar-isotropic confined active particles", Y. Fily, A. Baskaran and M. F Hagan EPJE **40**, 61 (2017) arXiv:1612.08719
36. "Steady-state distributions of ideal active Brownian particles under confinement and forcing", C. G. Wagner, M. F. Hagan and A. Baskaran JSTAT 043203 (2017) arXiv:1611.01834.

35"Theory of microphase separation in bidisperse chiral membranes" R. Sakhardande, S. Stanojeviea, A. Baskaran, A. Baskaran, M. F. Hagan and B. Chakraborty, Phys. Rev. E, **96**, 012704 (2017) **arXiv:1604.03012**

34. "A classical nucleation theory description of active colloid assembly", G. S. Redner, C. G. Wagner, A. Baskaran and M. F Hagan Phys. Rev. Lett. 117 148002 (2016) **arXiv:1603.01362**

33. "Active Particles on Curved Surfaces", Y. Fily, A. Baskaran and M. F Hagan, (submitted to PRL) **arXiv:1601.00324**

32. "Emergent Self organization in active materials", M. F. Hagan and A. Baskaran, Current Opinion in Cell Biology 38, 74-80 (2016) **arXiv:1602.03388**

31. "Instabilities, defects and defect ordering in an overdamped active nematic", E. F. Putzig, G. Redner, A. Baskaran and A. Baskaran, Soft Matter, **12**, 3854-3859 (2016) **arXiv:1506.03501**

30. "Comparison between Smoluchowski and Boltzmann approaches to self-propelled hard rods", E. Bertin, A. Baskaran, H. Chate and M. C Marchetti, Phys. Rev E 92, 041421 (2015) **arXiv:1507.07812**

29. "Effect of reorientation statistics on the torque response of a self propelled particle", B. Hancock and A. Baskaran, Phys. Rev. E 92 052143 (2015) **arXiv:1508.05887**

28. "Orientational order of motile defects in active nematics", S. J. DeCamp, G. S. Redner, A. Baskaran, M. F. Hagan and Z. Dogic Nature Materials, 14, 1110-1115 (2015) arXiv:1501.06228

27. "What is the pressure of an active fluid?", A. P. Solon, Y. Fily, A. Baskaran, M. E. Cates, Y. Kafri, M. Kardar and J. Tailleur, Nature Physics 11, 673-678 (2015) arXiv:1412.3952

26. "Dynamics of strongly confined self-propelled particles in non-convex boundaries", Y. Fily, A. Baskaran and M. F. Hagan, Phys. Rev. E **91**, 012125 (2015), arXiv:1410.5151

25. "Phase separation and Emergent Structures in an active nematic", E. F. Putzig and A. Baskaran Phys. Rev. E, 90 042304 (2014) arXiv:1403.0970

24. "Dynamics of Self-propelled particles under strong confinement", Y. Fily, A. Baskaran and M. F. Hagan, Soft Matter, **10**, 5609-5617 (2014), arXiv:1402.5583

23. "Shear driven aggregation of SU8 Microrods in suspension", P. Kumar, D. Gold, D. L. Blair, A. Baskaran and J. S. Urbach, ***Soft Matter***, **10**, 6514-6519 (2014).

22. "Kinetic Density Functional Theory of Freezing", A. Baskaran, A. Baskaran and J. Lowengrub, J. Chem. Phys. **141**, 174506 (2014) arXiv:1310.6070

21. "Reentrant phase behavior in active colloids with attraction", G. S. Redner, A. Baskaran and M. F. Hagan, Phys. Rev. E **88**, 012305 (2013)

20. "Structure and dynamics of a phase-separating active colloidal fluid", G. S. Redner, M. F. Hagan and A. Baskaran, Phys. Rev. Let*t* **110,** 055701 (2013) arXiv:1207.1737.

19. "Kinetic theory of active and granular particles", Proceedings of RGD28, *AIP Conference Proceedings*. Vol. 1501, 11 (2012)

18. "Self-regulation in Self-propelled Nematic Fluids", A. Baskaran and M. C. Marchetti, Euro. Phys. J. E **35**, 1-8 (2012) arXiv:1204.3273.

17. "Dynamical self-regulation in self-propelled particle flows", A. Gopinath, M. F. Hagan, M. C. Marchetti and A. Baskaran, Phys. Rev. E 85, 061903 (2012) arXiv:1112.6011

16. "Spontaneous Segregation of Self-Propelled Particles with Different Motilities", S. R. McCandlish, A. Baskaran and M. F. Hagan, *Soft Matter***, 8**, 2527 (2012) arXiv:1110.2479

15. "Cooperative Self-Propulsion of Active and Passive Rotors", Y. Fily, A. Baskaran and M. C. Marchetti, *Soft Matter***, 8**, 3002 (2012) arXiv:1107.0347

14 "Fluctuations and Pattern Formation in Self-propelled Particles", S. Mishra, A. Baskaran and M. C. Marchetti, Phys. Rev. E 81, 061916 (2010); arXiv:1001.3334

13. “Nonequilibrium statistical mechanics of self propelled hard rods”, A. Baskaran and M. C. Marchetti, J. Stat. Mech. P04019 (2010) arXiv:1002.3831.
12. “Statistical Mechanics and Hydrodynamics of Bacterial Suspensions”, Aparna Baskaran and M. C. Marchetti, PNAS **106** 15567 (2009).
11. “Granular Hydrodynamics from Kinetic Theory – Fundamental Considerations”, James W. Dufty and Aparna Baskaran, invited chapter in *Computational Gas Solid Flows – Theory, Methods and Practice*, eds. Pannala, Syamlal, O’Brien, IGI-Global (2010) arXiv:0910.0238.
10. “Enhanced Diffusion and Ordering of Self-propelled Rods”, A. Baskaran and M. C. Marchetti, Phys. Rev. Lett., **101**, 268101 (2008); arXiv: 0806.4559 .
9. “Isotropic Cholesteric transition of a weakly chiral elastomer cylinder”, X. Xing and A. Baskaran, Phys. Rev. E., 78, 021709 (2008); arXiv:0801.3661
8. “Hydrodynamics of self propelled hard rods”, A. Baskaran and M. C. Marchetti Phys. Rev. E **77**, 011920 (2008)**; arXiv:0708.2401**
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.
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
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
4. “Linear Response for a Granular Fluid”, J. W. Dufty, A. Baskaran, J. J. Brey, J. Stat. Mech. (2006) L08002; cond-mat/0507609.
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-mat/0503180
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.
1. "Gaussian Kinetic Model for Granular Gases", J. W. Dufty, A. Baskaran, and L. Zogaib, Phys. Rev. E **69**, 051301; cond-mat/0312113.

Other Professional Activity:

- Member, American Physical Society.
- Member, American Association for the Advancement of Science.
- Referee for APS journals, AIP journals, EPS journals, J. Stat Mech, J. Stat Phys, Nature Physics, Nature Communications, New Journal of Physics, Soft Matter.
- Co-organizer, Advanced Studies Institute : Thermalization in quantum and classical systems, Bangalore India, June 2013
- Participant and Mentor, SACNAS meeting October 2013
- Invited Participant, Active Matter program at KITP, Santa Barbara, Jan-March 2014.
- Invited Speaker and mentor, Gordon Research seminar on Granular and Granular fluid flows, July 2014
- Vice-chair (together with Devraj Van der Meer), Gordon Research Conference on Granular and Granular fluid flows 2016. Chair for 2018 meeting
- Faculty advisor, Women in Science Initiative at Brandeis, 2014-present

- Invited participant, Scialog : Molecules come to life, sponsored by Research Corporation and Gordon and Betty Moore foundation 2015/2016
- Lecturer, UMass Amherst Summer School on soft solids and complex fluids, June 2015
- Member at Large the New England section of the American physical society (elected 2015-17).
- Member at Large, Group on Nonlinear and Statistical Physics, APS (elected 2016-19)
- Judge, GSNP student and post doc speaker awards March meeting 2017.
- Mentor and Panelist, Regional SACNAS meeting, Boston MA April 2017
- Co-organizer (with Julien Tailleur and Ayusman Sen) Aspen center for physics winter conference "Fundamental problems in active matter" January 2018
- Co-Chair Gordon Research Conference on Granular Materials July 2018
- Co-organizer (with Jonathan Keeling, Aditi Mitra and Silke Henkes), Aspen summer program on driven quantum systems and classical active matter, June 2019.

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).
- 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, University of Florida, for academic excellence and service to the university community.
- Scialog Fellow, Research Corporation 2015-2016.
- Jeanette Lerman-Neubauer '69 Prize for Excellence in Teaching and Mentoring, Brandeis University April 2018
- Recipient of the 2019 Early Career Award in Soft Matter Research, American Physical Society, March 2019.