Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

**Dynamics of Active Spinners**[1] SOMAYEH FARHADI, University of Pennsylvania, SERGIO MACHACA, Drexel University, JUSTIN AIRD, Virginia Polytechnic Institute and State University, PAULO ARRATIA, DOUG DURIAN, University of Pennsylvania — We have performed experiments on a system of active spinning particles. The particles are placed on a mesh, and an upward flow of air drives them to spin. The air flow induces spin due to the internal design of particles, which consists of turbine-like blades. We then study the collective dynamics of this model system as the packing fraction is varied. Our measurements show that the velocity distribution function (VDF) deviates from Gaussian behavior, which is typical for dissipative systems. For $0.28 < \phi < 0.34$, a robust exponential distribution is observed. As the packing fraction is increased beyond $\phi > 0.34$, the VDF starts to deviate from exponential, and approaches Gaussian distribution. We then use a modified Langevin equation to explain this transition. We also study the spin segregation of particles. Our observation indicates that the mixture of particles with opposite spin directions, immediately form clusters which are relatively stable over time.

[1]Penn NSF MRSEC (DMR-1120901), Penn MRSEC Summer REU Program

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Date submitted: 10 Nov 2016 Electronic form version 1.4