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Zhenlu Cui* (zcui@uncfsu.edu), Department of Math and Computer Science, Fayetteville State University, 1200 Murchison Rd, Fayetteville, NC 28301. *Hydrodynamics and Rheology of Active Particle Suspensions*. Preliminary report.

Active materials are a challenging class of systems driven out of equilibrium by an internal or an external energy source. Examples are self-propelled particles in bacterial colonies, or the membrane and the cytoskeleton of eukaryotic cells, etc. In this talk, I will present a hydrodynamic theory of flowing active particle suspensions and discuss the flow and rheological behaviors of these materials. In sharp contrast to their passive counterparts, the flow is either permeative or oscillatory under weak external forcing. The rheological behaviors are altered due to the activity induced by the system. (Received January 09, 2009)