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Phase behavior of standing disks in 2D KUN ZHAO, Princeton University, CHRISTOPHER HARRISON, Schlumberger-Doll Research Center, MATTHEW SULLIVAN, Princeton University, THOMAS MASON, University of California- Los Angeles, DAVID HUSE, WILLIAM RUSSEL, Princeton University, PAUL CHAIKIN, New York University — We use photolithography to fabricate plate-like colloidal PMMA disks (diameter$\sim$5.3micron, thickness$\sim$0.8micron). Using an electric field normal to the cover slip, we can get a monolayer of disks standing on their edges. The system resembles a 2D set of colloidal rectangles. We study the phase behavior of this system and find that there is K-T transition from isotropic to nematic (quasi-smectic). Between these two phases, we find a regime where tetratic correlations are longer range than nematic. By studying the disclinations and domain walls, we suggest that the tetratic phase is driven by the nearby nematic and exists on a length scale larger than the nematic domain wall spacing but smaller than the interdisclination distance.

Kun Zhao
Princeton University

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