

Abstract Submitted
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A theory for depletion-induced colloidal membranes¹ LOUIS KANG, TOM C. LUBENSKY, University of Pennsylvania — Depletion-induced formation of colloidal membranes has been recently observed in suspensions of hard rods [E. Barry and Z. Dogic, *Proc. Natl. Acad. Sci. U.S.A.* **107**, 10348 (2010); T. Gibaud *et al.*, *Nature* **481**, 348 (2012)]. These membranes exhibit a variety of rich behaviors that must ultimately be driven by entropy alone. We propose an entropic model that can capture certain features of these membranes, including their curved edge shape and the presence of twist even with achiral rods. We calculate phenomenological parameters, such as the Frank twist constant and the Helfrich bending modulus, from physical quantities. Finally, we describe novel behaviors predicted by our model.

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