Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Hard Discs on the Hyperbolic Plane CARL MODES, RANDALL KAMIEN, University of Pennsylvania — We examine a simple hard disc fluid with no long range interactions on the two dimensional space of constant negative Gaussian curvature, the hyperbolic plane. This geometry provides a natural mechanism by which global crystalline order is frustrated, allowing us to construct a tractable model of disordered monodisperse hard discs. We extend free area theory and the virial expansion to this regime, deriving the equation of state for the system, and compare its predictions with simulation near an isostatic packing in the curved space.

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Date submitted: 12 Nov 2007 Electronic form version 1.4