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Changing the Packing Fraction by Changing the Geometry: A Hyperbolic Approach to Jamming CARL D. MODES, RANDALL D. KAMIEN, University of Pennsylvania — The jamming transition is an important and active area of current research in condensed matter physics, touching on phenomena from granular matter to supercooled liquids to glasses. Underlying the problem is the need to fully understand the properties of geometrically disordered configurations and their relation to ordered crystalline states, especially in systems where the effect of entropy dominates over that of energy. Of particular interest are systems for which the densities of isostaticity and crystallization are grossly separated, for example, in higher dimensions. In order to probe these systems with the Virial expansion, however, we must require that the onset of isostatic configurations occurs for sufficiently low numbers of simultaneously interacting particles. This leads us to the study of a hard disc fluid on the hyperbolic plane as a function of the curvature.

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