Abstract Submitted
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Two-dimensional Dimer System XIAOCHAO XU, DAVID PINE, Dept. of Physics and CSMR, New York University — We report on an experimental study of the two-dimensional phase behavior of colloidal dumbbells (dimers) trapped at a water-air interface. The dimers are made out of 1.6 μm silica microspheres that are fused together at a point. The water-air interface is very slightly concave so that the dimers are gently compressed by gravity towards the center of interface. The spheres form a stable dense state after a few days. For this dense phase, the location of peaks of both positional and angular pair correlation functions of the dimers reveals that many different orientations and configurations of the dimers are present and this is in agreement with the disorder crystal phase predicted by Monte Carlo Simulation. [1] We found that there is a relatively long range angular correlation, but the positional correlation is short-ranged. This long range angular correlation is limited by the domain sizes which are determined by the density of the defects in the system.

[1]K. W. Wojciechowski, A. C. Brańka and D. Frenkel, Physica A **196**, 519 (1993).

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