

Abstract Submitted  
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**Agglomeration of floating particles** P.D. WEIDMAN, University of Colorado, V. PUTKARADZE, Colorado State University, D.D. HOLM, Imperial College, London — Floating particles attract by surface tension. The energy of attraction of two individual particles has been investigated before (D. Vella and L. Mahadevan, *Am. J. Phys.*, **73**, 817-825, 2005). The energy of an arbitrary particle clump can be derived from binary interactions for small densities; for high densities, no explicit formula for the energy is known. We develop a highly accurate numerical scheme based on the boundary integral formulation. This numerical scheme is used to analyze the statistics of energies for many-particle clumps for dense configurations. An empirical formula for the energy which seems to be highly accurate for an arbitrary configuration of particles is proposed. To confirm the theory, experiments were conducted by placing particles in a given configuration on a stretched fabric net that was immersed in a water bath, with evolution of particle positions recorded by a digital camera. Results for the evolution of the second moment of the configuration of 10-25 particles show good agreement with theoretical predictions using a single parameter fit characterizing the unknown particle mobility.

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