Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Realizing Colloidal Artificial Ice on Arrays of Optical Traps ANDRAS LIBAL, University of Notre Dame, CHARLES REICHHARDT, CYNTHIA REICHHARDT, Los Alamos National Laboratory — We demonstrate how a colloidal version of artificial ice can be realized on optical trap lattices. Using numerical simulations, we show that this system obeys the ice rules and that for strong colloid-colloid interactions, an ordered ground state appears. We show that the ice rule ordering can occur for systems with as few as twenty-four traps and that the ordering transition can be observed at constant temperature by varying the barrier strength of the traps.

Andras Libal
University of Notre Dame

Date submitted: 19 Nov 2006 Electronic form version 1.4