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Breakdown of Pairwise Additivity in Colloidal Electrostatics[1]
SUNIL SAINIS, Yale University, Mechanical Engineering Department , ERIC DUFRESNE, Yale University, Departments of Mechanical Engineering, Chemical Engineering and Physics — Predictions of the structure and stability of charged colloidal suspensions typically assume pairwise additive forces. We directly measure electrostatic forces in small clusters of two to seven particles in a nonpolar solvent. We find that electrostatic interactions are not pairwise additive when the particle separations are much smaller than the screening length.

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