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Effective Interactions Between Like-Charged Colloids: The Role of Colloid Charge STEPHEN BARR, ERIK LUIJTEN, University of Illinois at Urbana-Champaign — We investigate the effect of colloid charge on the interactions between like-charged colloids in the presence of multivalent counterions by means of computer simulations. Because there is a large size asymmetry between the colloids and the counterions, conventional simulation methods are inefficient. In order to overcome this, we extend the generalized geometric cluster algorithm for colloidal suspensions [J. Liu and E. Luijten, Phys. Rev.Lett. **92**, 035504 (2004)] to allow for the efficient simulation of systems with electrostatic interactions. In the presence of multivalent counterions, like-charged attraction between the colloids is found to occur over a window of colloid charges. If the colloid charge is too low, the colloid-counterion attraction is too weak for like-charged attraction to occur, and if the colloid charge is too high, the direct electrostatic repulsion overwhelms the attraction induced by the counterions.

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