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Solvation effects on like-charge attraction SHAHZAD GHANBAR-IAN ALAVIJEH, JOERG ROTTLER, Department of Physics and Astronomy, The University of British Columbia — We present results of molecular dynamics simulations on electrostatic interaction between two parallel charged rods in the presence of divalent counterions. Such polyelectrolytes have been considered as a simple model for understanding electrostatic interaction in biomolecules such as DNA. Since there are correlations between the free charge carriers, the phenomenon of like charge attraction appears for specific parameters. We explore the effects of the nonlocal dielectric function of water on this peculiar phenomenon. The behavior of the force between the charged rods in a simulation model with full representation of water molecules are completely different from a model in which water is modeled as a continuum dielectric with  $\epsilon_r = 72$ . After calculating counterion-rodion pair correlation functions, we find that the presence of water molecules changes the distribution of counterions in the system and explains the difference in the behavior of the force in two models.

> Shahzad Ghanbarian Alavijeh Dept of Physics and Astronomy, The University of British Columbia

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