

Abstract Submitted
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Counter-ion fluctuations in the presence of a spherical macromolecule LEANDRO BOONZAAIER, KRISTIAN K. MUELLER-NEDEBOCK, Institute of Theoretical Physics, University of Stellenbosch, 7602 Matieland, South Africa, FREDERIK G. SCHOLTZ, National Institute for Theoretical Physics, Stellenbosch Institute for Advanced Study, 7600 Stellenbosch, South Africa — The effective interactions of charged macromolecules (e.g. polyelectrolytes) are still not fully understood. The role of counter-ion fluctuations, in the presence of these macromolecules, seems to be crucial in understanding these effective interactions. We consider a single charged spherical macromolecule, enclosed in a finite volume, in the presence of point-like counter-ions in an electrically neutral solution. Writing the partition function as a functional integral and only keeping terms up to quadratic order, we calculate the free energy in this approximation exactly.

Frederik G. Scholtz
National Institute for Theoretical Physics, Stellenbosch Institute for
Advanced Study, 7600 Stellenbosch, South Africa

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