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**Electrostatic persistence length of flexible polyelectrolytes: resolving the controversy between theory and experiments** WEI QU, ERIK LUIJTEN, Northwestern University — The salt concentration dependence of the electrostatic persistence length  $l_e$  of flexible polyelectrolytes has been the subject of extensive debate over the past two decades. Although theoretically a consensus has been reached regarding the correctness of the extension by Khokhlov and Khachaturian (KK) of the well-known Odijk–Skolnick–Fixman (OSF) theory to flexible polyelectrolytes, one crucial question remains: the strong disagreement between the OSF–KK prediction and various experimental observations. We present the results of extensive simulations of a flexible polyelectrolyte in solution to elucidate the origin of this discrepancy, and demonstrate that it originates from neglecting ionic excluded volume in the theoretical treatment.

Wei Qu  
Northwestern University

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