

Abstract Submitted  
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**Spanning the gap between strong and weak-coupling electrostatics for charged rods**<sup>1</sup> CHRISTIAN SANTANGELO, University of Pennsylvania — I present a method to compute the distribution of counterions near a charged macromolecule at intermediate coupling. The procedure involves decomposing the Coulomb interaction into a separate short and long distance piece. The long distance piece is treated within mean-field theory and a strong-coupling expansion is performed for the long distance part. The theory recovers both the strong and weak coupling results in the appropriate limit for charged surfaces. Furthermore, it is accurate for describing the density at intermediate coupling. I derive from this a two-fluid model for a charged rod with discrete charges along its center axis, making contact with previous models of discretely-charged rods.

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