

Abstract Submitted
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Computational algorithms for vesicle electrohydrodynamics¹

SHRAVAN VEERAPANENI, University of Michigan — In this talk, we discuss a new integral equation method for simulating the electrohydrodynamics of a suspension of vesicles. The classical Taylor-Melcher leaky-dielectric model is employed for the electric response of each vesicle and the Helfrich energy model combined with local inextensibility is employed for its elastic response. The coupled governing equations for the vesicle position and its transmembrane electric potential are solved using a numerical method that is spectrally accurate in space and first-order in time. The method uses a semi-implicit time-stepping scheme to overcome the numerical stiffness associated with the governing equations. We will present new results on the suspension rheology, two-body interactions and pattern formation. This is joint work with Bowei Wu.

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Shravan Veerapaneni
University of Michigan

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