

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Lipid Bilayer Vesicle Dynamics in AC Electric Fields LANE MC-CONNELL, University of New Mexico, PETIA VLAHOVSKA, Brown University, MICHAEL MIKSIS, Northwestern University — Vesicles are closed, fluid-filled lipid bilayers which are mechanically similar to biological cells and which undergo shape transitions in the presence of electric fields. Here we model the vesicle membrane as an infinitely thin, capacitive, area-incompressible interface with the surrounding fluids acting as charge-advecting leaky dielectrics. We then implement the boundary integral method to numerically investigate the dynamics of a vesicle in various AC electric field profiles. Our numerical results are then compared with recent small deformation theory and experimental data. We also note our observation of a new theoretical vesicle behavior that has yet to be observed experimentally.

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Date submitted: 04 Aug 2014

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