

Abstract Submitted
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Thermal undulations of biomimetic bilayer membranes in external fields¹ NICO FRICKE, PETIA VLAHOVSKA, Brown University — We study the influence of an applied electric field on the physical properties of fluid bilayer membranes. Global and regional analyses of the shape fluctuations of a giant quasi-spherical vesicle are used to determine membrane tension, bending rigidity, and shear viscosity from a time series of video- microscopy images. The parameters of the uniform electric field (frequency and amplitude) are chosen such that there is no global ellipsoidal vesicle deformation, and hence any renormalization of the tension and bending rigidity arise only from electric stress in the membrane. Using this approach we examine the effect of the electrotension on the main phase transition temperature of lipid membranes, where we observe that increasing field strength decreases, albeit slightly (about 0.1K), the melting temperature.

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