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Shape fluctuations of a giant lipid vesicle[1] HAMMAD FAIZI, Northwestern University, NICOLAS GALLE, Brown University, PETIA VLAHOVSKA, Northwestern University — Ultra-soft fluid interfaces, like biological membranes, possess a unique combination of area-incompressibility and very low bending rigidity. Several methods have been developed for the measurement of membrane bending rigidity and tension. Flicker spectroscopy relies on measurement of thermal shape undulations of the membrame. Mechanical deformation techniques such as micropipette aspiration and electrodeformation rely on the overall deformation of giant vesicles. Slight discrepancies have been observed in the bending rigidity measured with a different method. In this project, we measure the bending rigidity of the same vesicle with three different techniques; fluctuation analysis, electrodeformation and a new hybrid technique developed by us Fluctuation analysis of a vesicle under electric field. We assess if these methods yield different values and discuss our findings in the context of local vs global properties, equilibrium vs out-of-equilibrium conditions.

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