

Abstract Submitted  
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**Ellipsoidal Relaxation of Electrodeformed Vesicles** MIAO YU, Rutgers, the State University of New Jersey, RAFAEL LIRA, Max Planck Institute of Colloids and Interfaces, KARIN RISKE, Univ Fed Sao Paulo, RUMIANA DIMOVA, Max Planck Institute of Colloids and Interfaces, HAO LIN, Rutgers, the State University of New Jersey — Theoretical analysis and experimental quantification on the ellipsoidal relaxation of electrodeformed vesicles are presented. A closed-form solution is derived which predicts the aspect ratio as a function of time. Analysis of the solution and experimental data reveals good agreement, and two distinguishable regimes are identified. The “entropic” regime is dictated by the Helfrich constitutive relation, and in the “constant tension” regime the aspect ratio exhibits an exponential decay. Both the bending rigidity and initial membrane tension are accurately extracted. The relaxation of electroporated vesicles is also briefly discussed. This analytical approach provides a simple and powerful tool to query the mechanics of lipid membranes and similar soft materials.

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