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Time-dependent Gaussian field models for the analysis of structure and dynamics of fluctuating membranes

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The structure and fluctuations of membranes such as phospholipid vesicles or microemulsions is experimentally accessible with small angle neutron and x-ray scattering (SANS and SAXS) and neutron spin echo spectroscopy (NSE). A mathematical model is developed which jointly analyzes SANS, SAXS and NSE data within a single framework. As an example, scattering data from unilamellar vesicles [1] and from microemulsions [2] will be presented.

[1] Cedric J. Gommes, Purushottam S. Dubey, Andreas M. Stadler, Baohu Wu, Orsolya Czakkel, Lionel Porcar, Sebastian Jaksch, Henrich Frielinghaus, Olaf Holderer, A Gaussian model of fluctuating membrane and its scattering properties, arXiv:2404.08569
[2] Cedric J. Gommes, Reiner Zorn, Sebastian Jaksch, Henrich Frielinghaus, Olaf Holderer, Inelastic neutron scattering analysis with time-dependent Gaussian-field models, J. Chem. Phys. 155, 024121 (2021)

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