

Nonlinear shape perturbations induced by vesicle inclusions

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Abstract

We analyse the effects that a rigid inclusion induces on the stationary shapes of an impermeable three-dimensional vesicle. Our study, performed via a numerical calculation, takes into account shapes which are not close to any reference configuration (neither spherical nor planar). The shape perturbations induced by the embedded inclusions are restricted within distances of the order of the inclusion size. Thus, inclusions do not interfere with global vesicle properties, such as budding transitions. The local character of the inclusion perturbation announces a fast distance decay of the membrane mediated elastic force between different proteins.

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