

Impermeability effects in three-dimensional vesicles

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Abstract. We analyse the effects that the impermeability constraint induces on the equilibrium shapes of a three-dimensional vesicle hosting a rigid inclusion. A given alteration of the inclusion and/or vesicle parameters leads to shape modifications of different orders of magnitude, when applied to permeable or impermeable vesicles. Moreover, the enclosed-volume constraint wrecks the uniqueness of stationary equilibrium shapes, and gives rise to pear-shaped or stomatocyte-like vesicles.

Date: December 19, 2003