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Tube formation in fluid membranes TAO ZHANG, Syracuse University, RASTKO SKNEPNEK, University of Dundee, JENNIFER SCHWARZ, MARK BOWICK, Syracuse University — Consider a point force pulling on a fluid membrane. As the magnitude of the force increases, there is a first-order shape transition from nontubular to tubular with a force barrier in between. Motivated by tube formation in endocytosis in yeast, we generalize this problem by including additional force components and steric interactions. Both new ingredients are a consequence of the underlying actin cytoskeletal network, which exerts active forces on the cell membrane to deform it into a tube. We study this generalized problem using variational and Monte Carlo methods in order to quantify endocytosis in yeast.

Tao Zhang
Syracuse University

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