Abstract Submitted
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Axi-symmetric patterns of active polar filaments on spherical and composite surfaces[1] PRAGYA SRIVASTAVA, Physics Department, Syracuse University, Syracuse, NY-13244, MADAN RAO, Raman Research Institute, Bangalore-560080, India and National Center For Biological Sciences, Bangalore-560065, India — Experiments performed on Fission Yeast cells of cylindrical and spherical shapes, rod-shaped bacteria and reconstituted cylindrical liposomes suggest the influence of cell geometry on patterning of cortical actin. A theoretical model based on active hydrodynamic description of cortical actin that includes curvature-orientation coupling predicts spontaneous formation of acto-myosin rings, cables and nodes on cylindrical and spherical geometries [P. Srivastava et al, PRL **110**, 168104(2013)]. Stability and dynamics of these patterns is also affected by the cellular shape and has been observed in experiments performed on Fission Yeast cells of spherical shape. Motivated by this, we study the stability and dynamics of axi-symmetric patterns of active polar filaments on the surfaces of spherical, saddle shaped and conical geometry and classify the stable steady state patterns on these surfaces. Based on the analysis of the fluorescence images of Myosin-II during ring slippage we propose a simple mechanical model for ring-sliding based on force balance and make quantitative comparison with the experiments performed on Fission Yeast cells.

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