

Abstract Submitted
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Steady-state configurations and dynamics of the MreB helix within bacteria ANDREW RUTENBERG, JUN ALLARD, Dalhousie University — We present a quantitative model of the actin-like MreB cytoskeleton that is present in many prokaryotes. Individual MreB polymers are bundled into a supramolecular array to make up helical cables. The cell wall imposes constraint forces through a global elasticity model. With variational techniques and stochastic simulations we obtain relationships between observable quantities such as the pitch of the helix, the total abundance of MreB molecules, and the thickness of the MreB cables. We address changes expected with slow cell growth, as well as turnover dynamics that are relevant to FRAP studies. We also address polarized macromolecular trafficking along the MreB cables without motor proteins.

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