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Physics of the actin cortex in shape oscillations of dividing cells GUILLAUME SALBREUX, Max Planck Institute for the Physics of Complex Systems, Dresden, EWA PALUCH LAB COLLABORATION¹ — During cytokinesis, a contractile actomyosin cortex is present at the poles of the dividing cell. For a large enough tension of the polar cortex, a physical symmetry-breaking instability of the cell shape can occur where one pole transfers its volume to the other. Such a shape instability can indeed be observed in control and treated dividing cultured cells where it results in cell shape oscillations and in some cases leads to cytokinesis failure. The cell oscillation properties can be accurately described with a theoretical model based on a competition between cortex turnover and contraction dynamics. Interestingly, our results indicate that a sufficiently large cell elasticity is needed to ensure successful cytokinesis.

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Prefer Oral Session

Prefer Poster Session

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