Contraction dynamics of active actin networks

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Contractile actin structures play a vital role in a large variety of cell types, e.g. in determining their morphology or enabling cell propulsion. Here, we study the dynamics in a well controlled *in vitro* system consisting of thin sheets of actin, contracting through the activity of embedded myosin motors.
These experiments reveal characteristic contraction patterns for such networks. The contraction speed increases linearly at first, before it decays exponentially. For asymmetric initial x-y-aspect-ratios, the contraction dynamics follows this asymmetry. Using a continuous elastic model for the filaments combined with a dynamic equation to take motor activity into account, we are able to qualitatively reproduce the asymmetric contraction and the contraction speed curves, as well as density profiles of the actin gels.