

سمینار هفتگی ماده چگال نرم

عنوان سمینار

Putting the mitotic spindle in its place

ارائه دهنده

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چکیده

A cell is a complex fluidic environment in which many fundamental biological processes take place. One such process is the proper positioning and elongation of the mitotic spindle, which is crucial for chromosome segregation and asymmetric cell division and involves the interaction of microtubule assemblies with motor-proteins and subcellular organelles. In an integrated experimental and computational study, we use a combination of laser ablation, fluid flow measurements, molecular perturbations, large scale fluid mechanics simulations, stochastic simulations, and analytical theory to argue that proper positioning is primarily achieved by the action of motor-proteins bound to the cell boundary. This allows us to develop a unified theory of how oscillations, stable positioning, and migration result from the underlying behaviors of microtubules and motors. Theory should be broadly applicable to a wide variety of circumstances.

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