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**Waving of filaments induced by molecular motors** GABRIELE DE CANIO, ERIC LAUGA, RAYMOND E. GOLDSTEIN, University of Cambridge — In many cellular phenomena, for example cytoplasmic streaming, molecular motors translocate along microtubules carrying cargoes which entrain fluid. The piconewton forces that motors produce can be sufficient to bend or buckle the filaments. When large numbers of such forced filaments interact through the surrounding fluid, as in particular stages of oocyte development in *Drosophila melanogaster*, complex dynamics are observed, but the mechanism underlying them has remained unclear. By using a combination of theory and numerical simulations, we study a simplified microtubules-molecular motor system in a viscous fluid and show that it can capture the wave-like filament motion dynamics observed in experiments.

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