

## Collective properties of molecular motors: a model of active friction

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In this talk, we discuss the collective behaviour of assemblies of molecular motors and in particular the dynamic instabilities and the oscillations that they can generate. We propose a two-state “soft-motor” model for the collective behaviour of molecular motors, which takes into account both the internal motor stiffness and the periodic interaction with the filament. Dynamic instabilities associated with negative friction occur in the two different limits of very rigid and very soft motors. These limits correspond to the two existing theories of motor assemblies, the rigid two-state model and the cross-bridge model. As in the Prandtl-Tomlinson model of tribology, the important parameter monitoring the dynamic instability is the pinning parameter, which compares the stiffness of the motors to the stiffness of the potential.