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A mathematical model of stress generation in microtubule pair interactions FANG FANG, Courant Inst, MEREDITH BETTERTON, Physics Department, University of Colorado at Boulder, MICHAEL SHELLEY, Courant Institute of Mathematical Sciences — Microtubules and motor proteins are basic ingredients in many cellular structures and of new biosynthetic "active" suspensions. The interaction of microtubules with their surrounding fluid medium depends fundamentally upon the force generation afforded them through cross-linking motile motor proteins. Here we develop a simple mathematical model, based on the statistical mechanics, motor proteins binding and unbinding, to study the generation of active fluid stresses. We study the role and contributions of "polarity sorting" and "tether" relaxation on the generation of intrinsic, destabilizing stresses.

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