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Elastic Behavior of Composite Actin and Microtubule Networks
YI-CHIA LIN, Harvard University, GIJSJE KOENDERINK, AMOLF, the Institute for Atomic and Molecular Physics, FREDERICK MACKINTOSH, Vrije Universiteit, DAVID WEITZ, Harvard University — We explore the non-linear shearing behavior of composite actin and microtubule networks. Large bending rigid microtubules are used as a probe of the deformation mode of cross-linked actin networks. For a sparsely cross-linked actin network that deforms non-affinely, adding microtubules can drive the system back to affine by suppressing local rearrangements of actin filaments. It applies to both permanently rigid cross-linker, such as scruin, and flexible cross-linker, such as filamin. This experiment also shows that filamin cross-linked actin networks are deforming in an affine manner.

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