Abstract Submitted
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Biopolymer Networks: Simulations of Rigid Rods Connected by Wormlike Chains KNUT M. HEIDEMANN, Department for Numerical and Applied Mathematics, Georg August University Goettingen, MEENAKSHI M. PRABHUNE, FLORIAN REHFELDT, Third Institute of Physics - Biophysics, Georg August University Goettingen, MAX WARDETZKY, Department for Numerical and Applied Mathematics, Georg August University Goettingen, CHRISTOPH F. SCHMIDT, Third Institute of Physics - Biophysics, Georg August University Goettingen, SFB 755 NANOSCALE PHOTONIC IMAGING: HIGH-RESOLUTION STRESS-FIELD MAPPING IN FIBER NETWORKS AND CELLS COLLABORATION — The cytoskeleton of cells is a composite network of filaments ranging from stiff rod-like microtubules to semiflexible actin filaments that together play a crucial role in cell structure and mechanics. The collective dynamics of these cytoskeletal filaments with different mechanical properties are yet to be understood completely. To model such a strongly heterogeneous composite, we simulate networks of *rigid* rods connected by *flexible* linkers (wormlike chains). We extract elastic moduli by quasistatic deformations at varying filament densities and analyze the crossover between cross-link dominated and rod dominated regimes. In particular, we are interested in the asymptotic stress dependence of the *differential modulus*. The simulations are accompanied by rheological experiments on networks of *microtubules* (MTs) cross-linked by double-stranded *DNA* of variable length (cf. talk Meenakshi Prabhune).

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