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**Composite Random Fiber Networks** CATALIN PICU, ALI SHAH-SAVARI, Rensselaer Polytechnic Institute — Systems made from fibers are common in the biological and engineering worlds. In many instances, as for example in skin, where elastin and collagen fibers are present, the fiber network is composite, in the sense that it contains fibers of very different properties. The relationship between microstructural parameters and the elastic moduli of random fiber networks containing a single type of fiber is understood. In this work we address a similar target for the composite networks. We show that linear superposition of the contributions to stiffness of individual sub-networks does not apply and interesting non-linear effects are observed. A physical basis of these effects is proposed.

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