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Experimental Study of Athermal Elastic Network Mechanics JONATHAN MICHEL, PETER YUNKER, Georgia Institute of Technology — Recently, significant theoretical effort has been directed towards understanding the mechanics of networks. Elastic networks are of inherent fundamental interest [1] and serve as useful analogs for describing other physical systems. Recent applications include modeling of collagen [2] and descriptions of jamming in granular media and glass formation [3]. I propose to discuss ongoing experimental efforts to study mechanical properties of elastic networks, such as Youngs modulus and ultimate strength, in the athermal limit. I will begin with the simple case of regular, isostatic crystalline lattices and proceed to studies of random, connected elastic networks of varying bond number for a given number of lattice sites, including both isostatic and sub-isostatic networks.

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[2]Licup, J. et al.,"Stress Controls the mechanics of collagen networks", PNAS, 2015, 112:9573-9578
[3]Liu, A and Nagel, S. R., "The Jamming Transition and the Marginally Jammed Solid", Annual Reviews of Condensed Matter Physics, 2010, 1:347-69

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