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Impact of Particle Elasticity on Granular Force Networks JOHN WAMBAUGH, Duke University, ANNIE THEBPRA-SITH, Mount Holyoke College, ROBERT HARTLEY, Duke University, ROBERT BEHRINGER, Duke University — We investigate the distribution of force within vertically-confined granular assemblies using photoelastic techniques that allow determination of both geometric configuration and force upon each particle. By binning multiple realizations with depth, we are able to compare our results with the simple, continuum model of Janssen. Recent experimental studies of the force at the boundaries of such assemblies have largely confirmed Janssen's prediction that mean force saturates exponentially with depth due to frictional contacts at the boundaries. [Ovarlez, Fond and Clement, PRE 67, 060302 (2003)] We have observed deviations from these predictions in our system, which we quantify in terms of the structure of the network that distributes forces. We examine the role of internal elasticity of the particles in causing these deviations. This research is supported by NSF grants DMR-0137119 and DMS-204677 and NASA grant NNC04GB08G.

Prefer Oral Session
 Prefer Poster Session

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