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**Force fluctuations in collisional and frictional granular flows**

EMILY GARDEL, EFROSYNI SEITARIDOU, ELLEN KEENE, NALINI EASWAR, Smith College, Northampton, MA., NARAYANAN MENON, University of Massachusetts, Amherst, MA. — We make measurements of the force delivered to the wall in 2D and 3D flow geometries to explore the difference between collisional and frictional flows, and between flow geometries with and without velocity gradients in the flow direction. The distribution of force fluctuations has an exponential tail at large force in collisional flows, but falls off slower than an exponential in frictional flows. We do not see a clear signature in the force distribution of the approach to jamming and therefore the connection to force distributions in quasistatic flows remains to be understood. However, the temporal characteristics of the force fluctuations do show the approach to jamming. As reported earlier, the distribution of collision times tends to a power law in collisional flows. Similarly, the power spectrum of forces in frictional flows develops power-law behaviour at low frequencies as jamming is approached. Supported by NSF DMR 0305396 and NSF MRSEC DMR 0213695

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