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Jamming in Hopper Flow of Large Aspect Ratio Granular Materials SCOTT FRANKLIN, Rochester Institute of Technology — The clogging of granular materials at the exit of a silo or hopper is a matter of tremendous practical importance, as well as a canonical example of jamming. We investigate the effect of particle aspect ratio (length:width) on the jamming probability through experiments and discrete element simulations. Preliminary experimental results on particles with aspect ratios of 16 and 32 show that the probability $P(m)$ for m grains to exit the hopper has an exponentially decaying tail that, when scaled by the mean number that exit, is independent of exit aperture size. This scaling of $P(m/\langle m \rangle)$ is also observed in hopper flow of ordinary round materials, but the proposed phenomenological explanation of uncorrelated behaviors seems unlikely in long, thin rods. Furthermore, while the mean exit number obviously increases with aperture size, it is not clear which length scale is most relevant: particle length, width, or some combination of the two. We are also writing new discrete element simulations that can be compared with the experiments, and I will discuss some of the computational nuances introduced by particle asymmetry and present initial results.

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