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Jamming of Rod-like Granular Materials in Hoppers[1] SUMMER SARAF, SCOTT FRANKLIN, Rochester Institute of Technology — Long thin rods form solid plugs that are far more rigid than piles of ordinary sand, greatly affecting their ability to flow through small openings. We have built a hopper whose aperture, angle, and width can be independently varied and are studying the frequency with which rods of different length, width, and aspect ratio jam. As the opening aperture becomes larger, the mean number of particles that exit the hopper before a jam occurs naturally increases, but the probability distribution of fluctuations about this mean is unchanged. Unexpectedly, whereas the event distribution function $P(s)$ for spheres decays exponentially, we find the distribution for rods falls off as a power law with exponent α=-1.41$\pm$0.08. We are also investigating the growth of the mean event size ¡s¿ as the aperture increases for possible divergence, which would imply a critical aperture size above which particles would never jam.

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Summer Saraf
Rochester Institute of Technology

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