

Abstract Submitted  
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**Scaling, clustering and avalanches for steel beads in an external magnetic field**<sup>1</sup> ALYSE MARQUINEZ, INGRID THVEDT, S.Y. LEHMAN, D.T. JACOBS, The College of Wooster — We investigated avalanches using uniform 3mm steel spheres (“beads”) dropped onto a conical bead pile within a uniform magnetic field. The bead pile is built by pouring beads onto a circular base where the bottom layer of beads had been glued randomly. Beads are then individually dropped from a fixed height after which the pile is massed. This process is repeated for thousands of bead drops. By measuring the number of avalanches of a given size that occurred during the experiment, the resulting avalanche size distribution was compared to a power law description as predicted by self-organized criticality. As the magnetic field intensity increased, the beads clustered to give a larger angle of repose and we measured the change in the avalanche size distribution. The moments of the distribution give a sensitive test of mean-field theory as the universality class for these bead piles.

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