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Percolation transition in spherical granular material HEATHER MOORE, LORENZO DUMANCAS, TYLER RHOADES, MARK ZIMMERMAN, D.T. JACOBS, The College of Wooster, Wooster OH 44691 — Two properties of percolation were studied by measuring the resistance to the flow of electricity through a system of conducting and insulating spheres. The percolation threshold was measured on two system sizes by varying the volume fraction of conducting spheres in the mixture of 1 mm diameter silver coated and uncoated glass spheres and found to be 0.180 ± 0.006 by volume of conducting spheres. This value is consistent with other experimental observations in a variety of 3D systems. Near the percolation threshold, the conductance exhibited a power-law relation with respect to the difference of the composition from the threshold composition. We acknowledge support from the Howard Hughes Medical Institute through its undergraduate science education program and to the College of Wooster.

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