

Abstract Submitted
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Mixing and segregation in sheared granular materials KAREN E. DANIELS, DAVID W. FALLEST, KATHERINE C. PHILLIPS, DHRUMIL PATEL, Dept. of Physics, North Carolina State University — Granular materials typically segregate by size under shear, with the smaller particles moving in the direction of gravity and the larger particles accumulating at the top. We perform experiments in an annular cell continuously sheared from below, in which two sizes of glass spheres are initially placed in two unstably-stratified horizontal layers (smaller over larger). We observe the rate of mixing and re-segregation as a function of particle size ratio, shear speed, and confining pressure. The segregation rate is found to be exponential in time, and quite sensitive to the choice of boundary condition (free surface or constant pressure).

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