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Secondary Granular Flow a Split-Bottomed Couette Cell ANTONIO FERNANDEZ-BARBERO, Complex Fluids Physics Group, Department of Applied Physics,University of Almeria, 04120-Almeria, Spain, HEINRICH JAEGER, The James Franck Institute, University of Chicago, 5640 South Ellis Ave., Chicago, Illinois 60637-1433, USA, SIDNEY NAGEL, The James Franck Institute, University of Chicago, 5640 South Ellis Ave., Chicago, Illinois 60637-1433, USA, ANTONIO FERNANDEZ-BARBERO COLLABORATION, HEINRICH JAEGER TEAM, SIDNEY NAGEL TEAM — Granular materials and ordinary fluids react differently to shear stresses. The former develop shear bands rather than deform uniformly. Thus, shear regions of large particle motion are present in the surrounding of the essentially rigid adjacent zones. The extent of these shear bands may be increased when the system is sheared from the bottom of the container, thus taking advantage of the gravity [1]. In this talk, a new effect appearing in slit-bottom geometry is shown. A secondary flow in the vertical and radial directions becomes apparent and strongly depends on the height of grains in the system. Video tracking from the top free surface and MRI videos from the bulk of the system show this effect. [1] D. Fenistein, J. W. van de Meent, and M. van Hecke, PRL 92, 094301 (2004)

Antonio Fernandez-Barbero
Complex Fluids Physics Group, Department of Applied Physics,University of Almeria, 04120-Almeria, Spain

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