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Friction coefficients in 2D granular Couette flow[1] MATTHIAS SPERL, Duke University, KENNETH MCKENZIE, ROBERT P. BEHRINGER — Within geologic fault zones the internal friction in a material is expected to produce a large amount of heat. However, far less heat than expected is generated, giving rise to what is known as the heat flow paradox in geophysics. One possible explanation is that a fraction of the stress is not released by sliding friction but rolling of particles. We address this issue by studying a dense two-dimensional granular system under shear. In a Couette cell the overall torque is measured on the inner wheel for various packing fractions. This is compared to stress measured within the system using photoelastic particles. The relation between torque and mean shear force is interpreted as an effective friction coefficient μ. The goal of this work is to determine μ as a function of the mean applied load.

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