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Localized rotational effects on granular temperature JONATHAN HIGHAM, University of Liverpool, AVINASH VAIDHEESWARAN, WILLIAM FULLMER, NETL, JONAS SAFFON, Polytech Nantes — The granular temperature of a granular flow is seen to be analogous to a the Reynolds stress inside of a fluid flow. In both cases they represent how energy / momentum is passed around the medium. The main difference between a fluid flow and a granular flow is a fluid flows physics is governed by its viscosity, whilst a granular flow is governed by collisions and surface roughness. In a recent paper by Higham et al. (2019) it was shown a combination of individual surface roughnesses and collisions can cause rotational moments to be passed between the individual grains. These three dimensional rotations are not typically taken into consideration in simulations or in experiments, but can have quite an effect on the individual energy / momentum fluxes. In this presentation we present an experimental investigation of a two-dimension driven vortex in a granular flow. We use particle tracking to determine the spatial and rotational translations. From these data we determine what effect the localized rotations have of the granular temperature.

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