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Mechanical Properties of Sheared Wet Granular Piles RALF SEEMANN, MARC SCHABER, SOMNATH KARMAKAR, ANNA-LENA HIPPLER, Experimental Physics, Saarland University, 66041 Saarbruecken, Germany, MARIO SCHEEL, MARCO DI MICHIEL, European Synchrotron Radiation Facility, 6 Rue Jules Horowitz, 38000 Grenoble, France, MARTIN BRINKMANN, MPI for Dynamics and Self-Organization, 37077 Goettingen, Germany — The mechanical properties of dry and wet granulates are explored when being sheared with a parabolic profile at constant shear volume. The dissipated energy increase linearly with external pressure both for a wet and a dry granulate. However, the dissipated energy for wet a granulate has a finite value for the limiting case of vanishing external pressure and increases slower with external pressure compared to the dry granulate. Using a down sized version of the shear cell the reorganization of a granulate and liquid is additionally imaged in real time using x-ray micro-tomography. With the insight from x-ray tomography the contribution of the breaking capillary bridges to the dissipated energy can be analyzed. We could also shed light on the influence of dilatation effects on the dissipated energy upon inverting the shear direction.

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