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Energy dissipation in sheared wet granular systems[1] L KONDIC, L KOVALCINOVA, NJIT, S KARMAKAR, M SCHABER, A-L HIPPLER, Saarland U, M SCHEEL, M DIMICHIEL, ESRF, S HERMINGHAUS, MPI Gttingen, M BRINKMANN, R SEEMANN, Saarland U, MPI Gottingen — We carry out experiments and targeted simulations to analyze energy dissipation in sheared dry and wet granular systems. We consider the regime such that the wetness leads to the formation of capillary bridges, that are in the experiments visualized in 3D by in situ X-ray tomography in ESRF (Grenoble, France). The main focus is on unraveling the energy loss mechanisms, in particular regarding the role of friction, inelasticity of the particle collisions, and capillary bridges. We will show that, both in the experiments and simulations, the main source of energy loss depends strongly on the applied pressure. The simulations provide additional insight regarding the transition between different energy loss mechanisms, and allow for gaining further insight into the role that cohesive forces play in sheared granular systems.

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