

Well-posed and ill-posed behaviour of the $\mu(I)$ -rheology for granular flows

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The stability of the continuum equations for dense granular flow, formed with a recently proposed rheology, is assessed. This investigation consists of a linear stability analysis vindicated by numerical studies. It is found that for variation in the flow and/or constituent properties, there exists regions for which perturbations to the flow grow and regions for which they decay. Interestingly, the result appears to complement the known modelling limitations with break-down occurring in regions of parameter space where additional physics are known to dominate.