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**Discontinuous shear thickening for frictional granular particles** MATTHIAS GROB, CLAUS HEUSSINGER, ANNETTE ZIPPELIUS, Institute for Theoretical Physics, Göttingen University — We study the rheology of frictional granular particles with analytical modelling and numerical simulations in two dimensions. We derive a phase diagram with a topology different from the well known Liu-Nagel phase diagram for frictionless particles with a zero stress critical point. In contrast to the frictionless scenario, jamming first occurs at finite stress at a critical packing fraction $\phi_C$ while a finite yield stress emerges only at $\phi_\sigma > \phi_C$. Remarkably, the flow is reentrant and we observe discontinuous shear thickening in the flow curves for $\phi \in (\phi_C, \phi_\eta)$ with $\phi_\eta > \phi_\sigma$. All these features can be rationalized with a simple constitutive equation which contains the frictionless scenario as a limiting case.

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