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Phase diagram of granular flow on a rough inclined plane ROBERT ECKE, Los Alamos National Laboratory, TAMAS BORZSONYI, ISSPO, Hungarian Academy Sciences — We present an experimental characterization of the phase diagram of granular flow on an inclined plane for inclination angles up to twice the bulk angle of repose . The equation of state in terms of layer height, surface velocity and mean density is presented as a function of flow rate controlled by the opening aperture of the hopper. States of intermittent waves, uniform flow, and lateral stripes are found for dense granular flow. At low flow rates and high inclination angles a transition to a dilute gas phase is observed. The effects of air on the granular flow is also described with the conclusion that the equation of state of the dense granular flow is independent of entrained air although small air drag effects are observed for the dilute gas phase.

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