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Snow experiments with a coaxial rheometer

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Different models are applied to simulate snow avalanches. A big challenge of these simulations is the appropriate calculation of dynamic flow parameters from the starting zone till the deposit area.

With our experiments we want to investigate the rheology of snow constricted to particular conditions: a flow with low speed and high flow depth. These characteristics can often be observed in the deposit area of dense snow avalanches.

The employed experimental device is a rheometer that was first used to study rheological parameters of mud- and debris flows. The coaxial cylinders have diameters of 80 and 120 cm, respectively, and the height is 80 cm. The smaller inner cylinder can be rotated by a hydraulic engine with a maximum speed of 20 min^{-1}. For the experiments the gap between the two cylinders is filled up with snow. Inside the outer cylinder an inflatable membrane is attached, which is used to control the pressure on the snow during the tests.

Static and dynamic experiments have been carried out in winter 2006, first results will be presented.