



Brittle fracture in dry snow: Laboratory experiments and numerical simulations

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Brittle fracture of snow occurs at high strain rates and is the relevant deformation in the formation process of dry snow slab avalanches. The evolution of cracks in snow until fracture and how its microstructure governs this process is still poorly known. To this end, we make laboratory tensile tests with cm sized samples of homogeneous snow at high strain rates until the samples fractured. X-ray micro computertomography is used to obtain the undestroyed 3D microstructure of each sample tested. The tomography data can be used as geometric input in finite element simulations of tensile tests. We want to assess if numerical experiments are able to reproduce snow's fracture behavior as observed in laboratory experiments. If numerical tests could be used to test also the most fragile snow as found e.g. in weak layers, this method based on tomography data would provide a large potential to gain insight into the role of microstructure in brittle fracture processes.