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# Dynamics of propagating anticracks in snow slab avalanches

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Continuum numerical modeling of dynamic crack propagation has been a great challenge over the past decade. This is particularly the case for anticracks in porous materials, as reported in sedimentary rocks, deep earthquakes, landslides and snow avalanches, as material inter-penetration further complicates the problem. On the basis of a new elastoplasticity model for porous cohesive materials and a large strain hybrid Eulerian-Lagrangian numerical method, we accurately reproduce the onset and propagation dynamics of anticracks observed in Propagation Saw Test experiments. The key ingredient consists of a modified strain-softening plastic flow rule which captures the complexity of porous materials under mixed-mode loading accounting for the interplay between volumetric collapse and cohesion loss. We performed 3D large-scale simulations allowing to investigate the complex propagation patterns in the weak layer and their interplay with slab fracture and frictional sliding.