



Level-set modelling of glacier flow with crevasses formation

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We propose a numerical model for the study of crevasses formation within a glacier flowing on a hard rock bottom. Either the case of cold and temperate ice is considered within the Glen's ice constitutive law; a Weertman-type law for ice sliding on rocky surface is adopted. The formulation of the mathematical equations is eulerian both for the internal field and for the description of the moving boundary (ice-air interface), which is accomplished by a level-set technique. The geometrical flexibility of this approach is appropriate to describe crevasses without extra computational overload.

We shall present several numerical simulation tests on prototypical geometries representing critical conditions for crevasses formation.