

This thesis studies the continuum poro-damage mechanics (CPDM) and its application in the ice crack propagation model. The model is tested by the finite element method implementation - using the open-source library package FEniCS. The study examines the model's sensitivity and the crack depth on model parameters for a water-free crack. Furthermore, the thesis concentrates on the effect of applied additional longitudinal stress. Lastly, the model is tested on a water-filled crevasse. The water-free and water-filled cases follow the known theoretical predictions by the linear elastic fracture mechanics (LEFM), particularly considering deeper crevasses in the water-free case.