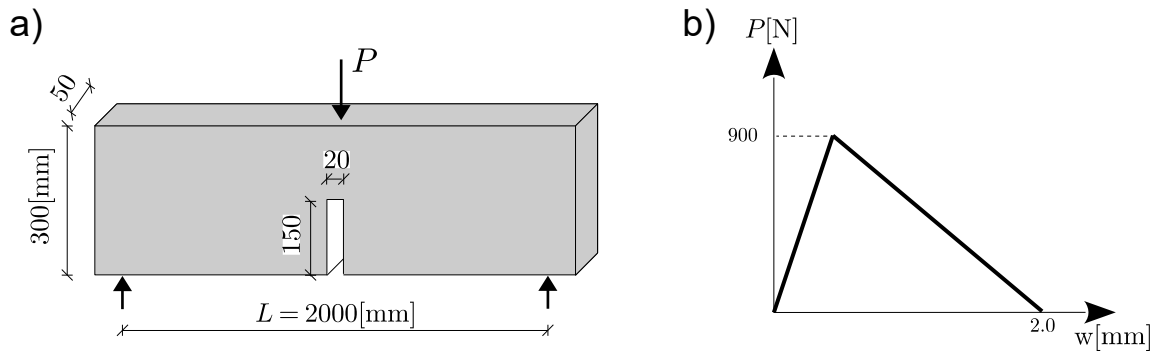


## X0701: Identification of the fracture energy

Using the 3-point bending test shown in Fig. a) the load-deflection curve displayed in Fig. b) has been measured.



- Determine the fracture energy  $G_F$  without considering the self-weight
- What would be the test response if the fracture energy was twice as large? Plot the response in terms of load deflection curve. Assume that  $P_{\max}$  does not change.
- Consider the case that the self-weight of the beam is large so that the specimen experiences load and deflection even before starting the test. Briefly explain the possible remedy to account for self-weight in the evaluation of fracture energy.
- Consider the non-regularized numerical model for the simulation of the 3-point bending test shown in Fig. c) with the shown discretization. Consider the fracture energy that has been calculated from the task a). Plot the numerical response if the width of the crack band element  $L_{cb}$  has been doubled.

