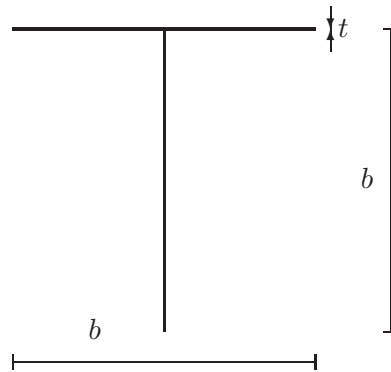


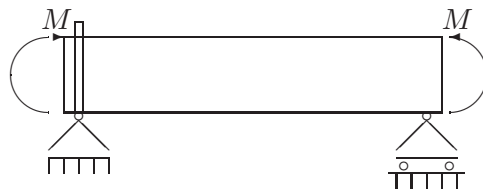
# Stability of structures

## 6. exercise – torsional and lateral buckling

1. Determine the critical load  $P_{cr}$  for a centrally compressed clamped beam. The cross-section is shown below and  $b = 10t$ ,  $\nu = 0$ . Determine the critical load as a function of the length.



2. Determine the critical lateral buckling moment  $M_{cr}$  for the beam shown below. The support on the rhs side prevents vertical and lateral displacements but the cross-section can rotate about the support. The cross-section is rectangular with dimensions  $b \times h$  where  $h \gg b$ .



3. Determine the critical moment  $M_{cr}$  for the beam shown below, the proportions are  $b = 10t$ ,  $L = 20b$ ,  $\nu = 1/3$ . What is the result if  $M$  is negative?

