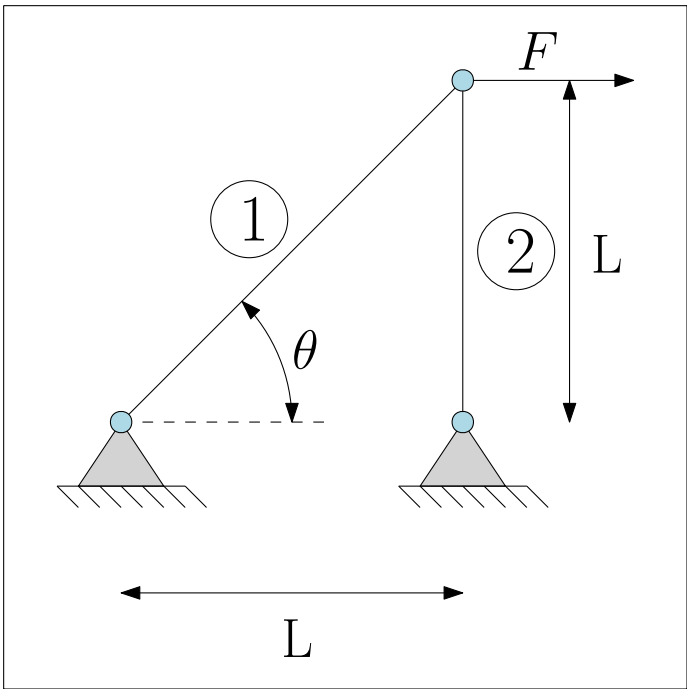
Analysis of planar isostatic truss structure

We want to compute the displacement at nodes of the following truss structure



The numerical values for this example are the following:

- $L = 1\ [\mathrm{m}]$;
- Cross section for beam 1: $A_1 = \sqrt{2}A$ where $A = 4 \cdot 10^{-4}\ [\mathrm{m}^2]$;
- Cross section for beam 2: $A_2 = A$;
- Young Modulus (for both beams) $E = 210\ [\mathrm{GPa}]$;
- From the geometry $\theta = \pi/4$;
- Applied force $F = 50\ \mathrm{kN}$.

The structure is isostatic so the reactions and internal forces do not depend on the physical parameters of the trusses. The reactions are found by using the equilibrium along the x, y, z. Once the reactions are known the internal forces are computed by isolated individual bars.