Problem 412

Determine the stresses in two thin-walled rings put on each other without any significant clearance or interference, if they rotate with the speed of 4000 rpm.

The inner ring is made of yellow brass ($\rho_1 = 8,9 \cdot 10^3\,\mathrm{kgm}^{-3}$, $E_1 = 1,2 \cdot 10^5\,\mathrm{MPa}$),

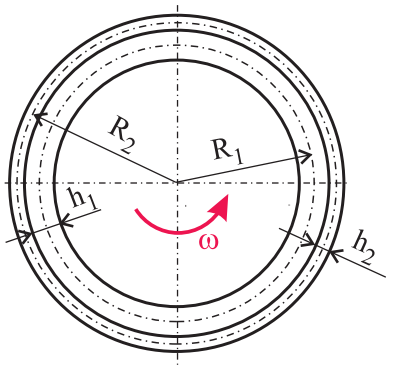
the outer one of steel ($\rho_2 = 7,8 \cdot 10^3\,\mathrm{kgm}^{-3}$, $E_2 = 2,2 \cdot 10^5\,\mathrm{MPa}$).

Input values:

$R_1 = 197\,\mathrm{mm}$, $h_1 = 6\,\mathrm{mm}$

$R_2 = 202\,\mathrm{mm}$, $h_2 = 4\,\mathrm{mm}$

$\omega = 4000\,\mathrm{rpm}$.



tension curvature of the centreline