

Mode Matching - second try

Mirror configuration

Parameter

- Radius of curvature of mirror R1: $R1 = 1 \text{ m}$
- Radius of curvature of mirror R2: $R2 = 1 \text{ m}$ (Incoupling side)
- Wavelength: $\lambda = 1542.0 \text{ nm}$
- Length between the resonator mirrors: $L = 480 \text{ mm}$
- Beam radius at cavity-waist: w_0
- Beam radius at mirror: w_1, w_2
- Distance between:
 - mirror R1 and mirror R2: L
 - mirror R2/lense 1 and lense 2: X
 - mirror R2/lense 1 and collimatorlense: $600\text{mm} - X$
 - $615\text{mm} = \text{optical way of the incoupling breadboard (450mm)} + \text{thickness breadboard (10mm)} + \text{distance between breadboard and vacuumchamber (30mm)} + \text{distance between vacuumchamber and cavity mirror R2 (130mm)}$
 - collimatorlense and fiber: $2.75 \mu\text{m}$

We used the programm *Strahl.exe* (@IQ) or *STRAHLFP.EXE* (@PTB) (same software, but different names).

Step 1: Beam waist calculation from resonator

Step 2:

Step 3:

Step 4:

Step 4b

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