Master or Bachelor Thesis in Physics/Space Engineering

Development of a compact tapered amplifier module for quantum technology experiments

Tapered amplifiers are semiconductor optical amplifiers with a narrow input waveguide that widens toward the output to enable watt-level power, used to boost narrow-linewidth diode lasers in MOPA setups for cold-atom experiments, spectroscopy, frequency conversion, and other free-space high-power applications. In this thesis such a TA System shall be designed, manufactured and tested.

The task would then be as follows:

1. literature research on TAs and general optics/electronics

2. selection of suitable driver electronics and TA chip

3. optical design

3. CAD design of the assembly

4. manufacturing of mechanical parts in close cooperation with the ZARM workshop

5. integration of the module and testing (extend of testing depending on whether it is a bachelor or master thesis)

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