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HOCHSCHULE EMDEN·LEER

Technical project / Bachelor-thesis

Vorname Name, Matr.-Nr. 700 (xy CPs)

Wavemeter

Valid in 2022 / 2023

Background

Wavemeter are common instruments in the industry. There exist a range of different principles with different effort and different precision and accuracy. Good Wavemeters are complex and expensive instruments but rarely meet all requirements for scientific purposes.

In the laboratories of the optical metrology group high precision and high accuracy measurements are planned. Therefore, the wavelength of different available lasers in the laboratory must be known accurately. The lasers wavelength' are typically far apart and thus difficult to measure with one wavemeter. With a Michelson-type wavemeter a precision of a few MHz can easily be reached. The spectral bandwidth of the wavemeter can be enhanced by rigid coupling of optomechanical components supporting optics with different coatings.

Purpose

Layout and setup of a wavemeter for different optical bandwidths.

Scope

Derive specifications from physical design and create a model for the setup. The setup shall be realized in a follow-up project (Bachelor-Thesis).

Steps

The following steps are necessary parts of the project

- Phase A:
    - Project planning in Redmine
    - Time planning with a Gantt-chart
    - Literature review
    - Physical Design
    - Derivation of Requirements
    - 3D model
- Phase B:
    - Choosing, purchasing of components
    - Setup & Alignment of the wavemeter
    - Experiments with a stabilized laser

Beginn: tbd
Erstprüfer
Name

Ende / Abgabe: tbd
Zweitprüfer / Betreuer
Name

Stand: 01.12.2021

- Report

Contacts to other institutes or industrial companies can be developed during the project.

Beginn: tbd
Erstprüfer
Name

Ende / Abgabe: tbd
Zweitprüfer / Betreuer
Name

Stand: 01.12.2021