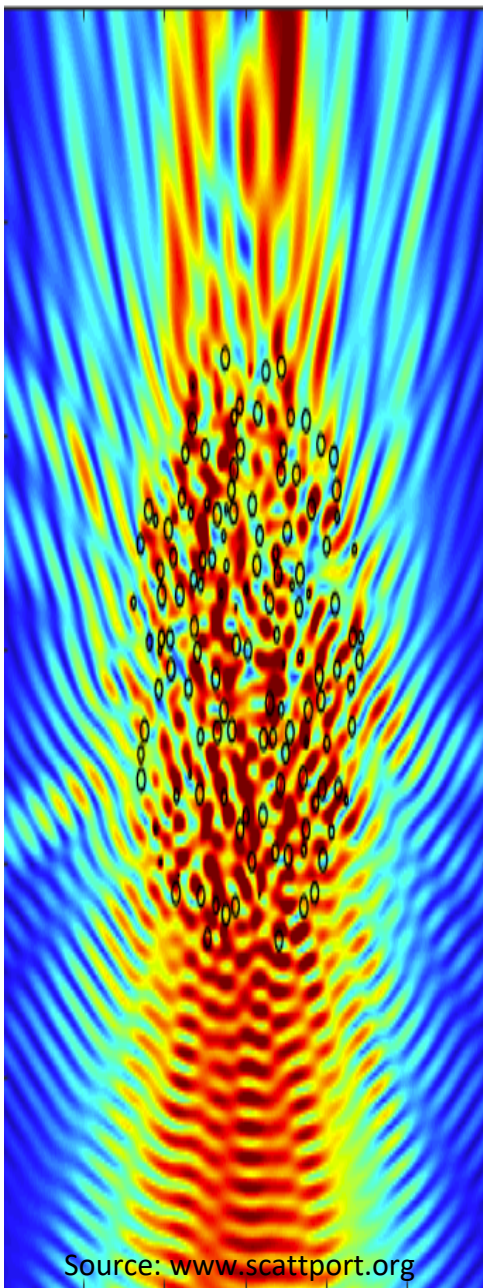


# Bachelor/Master Thesis:

## Optical modelling and simulation of light scattering and absorption effects

Systems Engineering, Mechanical Engineering and Process Technology, Production Engineering,  
Industrial Engineering, Electrical Engineering, Physics, and related



*Is it possible to optically detect the air surrounding a component and thus indirectly predict the component geometry?*

The basic idea behind indirect optical geometry measurement is to no longer measure the surface of the object to be measured directly, but instead - in an inverse process - to measure the geometry of the gas surrounding the body or the particle flow surrounding the body. With the help of the confocal volume of a confocal fluorescence microscope, it is examined in which spatial region fluorescence occurs and where it does not. The points where darkness prevails define the volume of the measurement object.

Various optical phenomena occur during the measurement process, some of which are to be modelled and simulated as part of the thesis.

The range of tasks is versatile, so that the focus as well as the depth of the modelling and theory can be individually adjusted according to experience and interest.

### Possible contents


- Modelling of the confocal volume
- Modelling of the measurement signal
- Light scattering and absorption in the particle stream

### Your profile

- Enthusiasm for light and optical systems
- Enjoy modelling and simulation
- You like to work independently & responsibly, and want to help shape the future of optical metrology!


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