



# Dielectric dimers for directional scattering

Master Thesis  
or  
Research Thesis

### Theory and Motivation:

- high-permittivity ceramics particles of spherical geometry can be designed to steer the incident radiation towards an user-defined direction
- a combination of two such dielectric spheres, known as a dimer, can be engineered to increase the directivity of the angular scattering pattern

### Application:

- non-invasive bio-sensing
- boosting antenna directivity
- near-field focusing

### Tasks:

- full-wave EM simulations of Alumina ceramic based dimers around 30 GHz
- for measurements, a bistatic setup needs to be developed with over-the-air calibration

### Information:

- requires some knowledge of high-frequency circuit design and concepts
- thesis can be written in either German or English language
- contact: Utpal Dey, room number: 3.238, email: utpal.dey@ihf.uni-stuttgart.de

