

Theory and Numerics of Inverse Scattering Problems

This workshop addresses specific inverse problems for the time-harmonic Maxwell's equations, resp. special cases of these, such as the Helmholtz equation or quasistatic approximations like in impedance tomography. The inverse problems to be considered include the reconstruction of obstacles and/or their material properties in a known background, given various kinds of data, such as near or far field measurements in the scattering context and boundary measurements in the quasistatic case, using one or several excitation frequencies. Of particular interest is also the “dual problem” of constructing “cloaking obstacles”, that is obstacles that are invisible for a given excitation and/or measurement setup.

Problems to be addressed include identifiability questions, rigorous developments of regularization strategies, as well as the implementation and convergence analysis of efficient reconstruction algorithms.