Carl von Ossietzky
Universität
Oldenburg

Institut für Physik

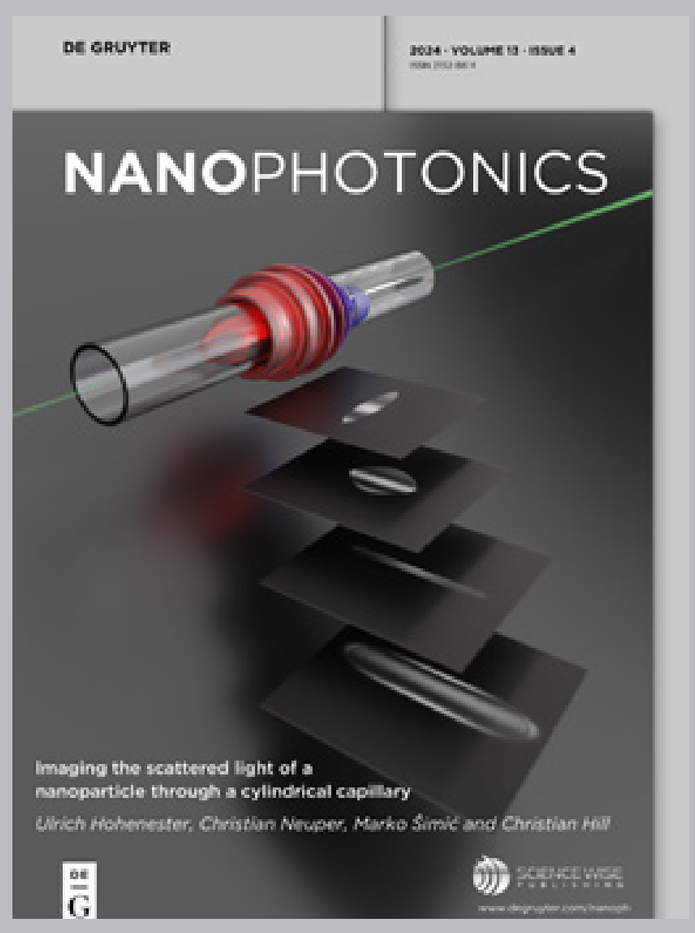
Physical Colloquium

„Computational Maxwell solver for nanophotonics and life sciences“

Prof. Dr. Ulrich Hohenester
Institute of Physics, University of Graz,
Austria

Monday, 13.01.2025, 2.15 p.m.
Room No. W02 1-148

In this talk, I introduce into the numerical solution of Maxwell‘s equations using a boundary element method, as well as our implementation within the nanobem toolbox. I will show that the solver is extremely fast and accurate for small to medium sized nanoparticles, and can be combined with T-matrix solvers for the simulation of metasurfaces. Three recent developments of the nanobem toolbox will be discussed. First, by using Feibelman parameters one can account for quantum surface effects that play an important role at sharp features and in small gap regions of plasmonic nanoparticles. Second, we have developed a versatile add-on to our toolbox for the simulation of interference scattering microscopy (iSCAT). Finally, in collaboration with the spin-off company BRAVE at the Medical University Graz we analyze a novel nanoparticle characterization scheme based on optical and fluidic forces (OF2i).



Host: Prof. Dr. Christoph Lienau