DK Seminar

Nov 16, 2016, 14:15 - 15:00
Vienna University of Technology,
Freihaus, green area, 4th floor

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Time domain boundary integral equations for scattering by composite media

In this talk, we consider a scattering problem by one or multiple partially impenetrable composite objects. Mathematically, this is modeled by solving the wave equation with a piecewise constant material parameter. We derive a formulation based on a dynamical system with appropriate transmission conditions and show the equivalence to a system of integral equations on the skeleton of the scatterer. This system of equations can be discretized in space using a Galerkin method and in time using the Runge-Kutta convolution quadrature. This discretized system has an equivalent counter part in a sequence of transmission problems related to the Runge-Kutta discretization of the original dynamical system. We use this to prove some a-priori convergence results of the fully discrete scheme.