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DK Seminar

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Alexander Rieder

Vienna University of Technology

Boundary Element Methods in time dependent wave propagation

In this talk, we present one possible way of using boundary integral methods to discretize wave propagation problems. This is achieved by combining a Galerkin Boundary Element Method in space with the Convolution Quadrature method for discretization in time. The toolkit of choice for understanding these problems and their discretization will be the theory of C_0 -semigroups, most notably their discretization using Runge-Kutta or Multistep time-stepping schemes.

We present results on the discretization of the linear time dependent Schrödinger equation, the wave equation, augmented by a nonlinear impedance boundary condition, and a scattering problem from an object made out of a composite material.