



Talk announcement

Martin Halla

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On the redundancy of regularity splittings for wavenumber explicit hp-FEM analysis

It is well known that finite element approximations of the Helmholtz equation suffer from the pollution effect for large wavenumbers k>0. This degeneracy can be avoided by the application of high order FEMs, with polynomial degree p chosen proportional to log k. The key ingredient of the respective analysis [1] is a so-called regularity splitting, which decomposes the solution of the Helmholtz equation with a L^2 right hand-side into an analytical part and k-well behaved H^2 part. The generalization of this technique for nonconstant coefficients and other boundary conditions is technical and nontrivial, but has received much attention lately. In this talk I show how the classical Schatz technique can be adapted to circumvent the necessity of any regularity splitting, which significantly simplifies the analysis. In the second part of the talk I discuss the application of this approach to heterogeneous media and Maxwell-impedance problems.