NAME Prof Frank-Olme Speck

ADDRESS Departamento de Matemática
Instituto Superior Técnico, U.T.L.
Avenida Rovisco Pais
1049-001 Lisboa, Portugal

FAX: +351-218417598 EMAIL ADDRESS: fspeck@math.ist.utl.pt

Abstract

"Diffraction by rectangular wedges from the viewpoint of operator theory"
by Frank-Olme Speck (Instituto Superior Técnico, U.T.L.)

In order to prove the correctness of a boundary value problem in mathematical physics in the sense of Jacques Hadamard, one has to show that the solution exists uniquely and depends on the data continuously (e.g. in suitable Sobolev spaces). This means that the associated operator, that gives us the data in terms of an element from the solution space, is a homeomorphism. This operator is often reduced to another one (by potential theoretic means, boundary integral equations, etc.) with a simpler structure. One of the strongest forms of reduction is an operator matrix identity called "toplinear equivalent after extension". In this lecture, we show how certain problems from linear wave propagation are reduced in a very clear form to convolution type operators with symmetry, identified as to be invertible (or Fredholm, normally solvable, etc.) and how those can be inverted by recent factorisation schemes.