

On spectral properties of the Neumann-Poincare integral operators

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In the end of 19th century, Carl Neumann and Henry Poincare proposed to use the double layer potential to solve boundary value problems for the Laplace operator. This approach turned out especially productive, which led, in particular to creation of Functional Analysis by Fredholm, Hilbert and many others. Since then, a lot of studies of these operators were performed, touching upon various properties.

Rather recently a new field of applications of NP operators appeared in connection with the so called cloaking and plasmonic resonance, properties of some recently created artificial materials possessing physical characteristics with 'wrong sign'. Among these new problems, one, considered in the talk, concerns the spectral properties of these operators, in particular, their compactness and noncompactness and, especially the asymptotic formulas and estimates for its eigenvalues.