

Meeting on Computational and Analytic Problems in Spectral Theory

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Abstract of Talk

BOUNDARY TRIPLES, KREIN FORMULA AND RESOLVENT ESTIMATES FOR ONE-DIMENSIONAL HIGH-CONTRAST PERIODIC PROBLEMS

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I will discuss operator-norm resolvent convergence estimates for one-dimensional ε -periodic differential operators A_ε with rapidly oscillating coefficients in the non-uniformly elliptic high-contrast ($1 : \varepsilon^2$) setting, which has been out of reach of the existing homogenisation techniques. Our analysis is based on a special representation of the resolvent of the fibres of A_ε in terms of the M -matrix of an associated boundary triple, due to M. G. Krein. The resulting asymptotic behaviour as $\varepsilon \rightarrow 0$, is shown to be described, up to a unitary equivalence, by a non-standard version of the Kronig-Penney model on the real axis \mathbb{R} . This is joint work with Alexander V. Kiselev.