



SPECTRAL FLOQUET-BLOCH THEORY FOR EQUATIONS WITH DISCONTINUOUS COEFFICIENTS AND UNBOUNDED PERIODICITY CELL

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(Joint work with B.M. Brown, M. Plum, I. Wood).

Floquet-Bloch theory characterizes the spectrum $\sigma(L)$ of a $2m$ -th order linear elliptic partial differential operator L with periodic coefficients (acting on functions defined on \mathbb{R}^d) in terms of the spectra $\sigma(L_k)$, where L_k are operators on the periodicity cell Ω ; in view of waveguide problems, we allow Ω to be unbounded. We treat the case where L may have possibly discontinuous, bounded coefficients. Rather than realizing L as an unbounded operator in $L^2(\mathbb{R}^d)$, we work in the Hilbert space $H^{-m}(\mathbb{R}^d)$. In this way we avoid problems with the operator domains arising from the presence of discontinuous coefficients.