Absolutely continuous and pure point spectra of discrete operators with sparse potentials

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Abstract

We consider the discrete Schr\"odinger operator $H=-\Delta+V$ with a sparse potential V and find conditions guaranteeing either existence of wave operators for the pair H and $H_0=-\Delta$, or presence of dense purely point spectrum of the operator H on some interval $[\lambda_0,0]$ with $\lambda_0<0$.

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