

INVERSE PROBLEMS, TRACE FORMULAE FOR DISCRETE
SCHRÖDINGER OPERATORS

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We study discrete Schrödinger operators with compactly supported potentials on the lattice $\mathbf{Z}^d, d \geq 2$. Constructing spectral representations and representing S-matrices by the generalized eigenfunctions, we show that the potential is uniquely reconstructed from the S-matrix of all energies. We also study the spectral shift function $\xi(\lambda)$ for the trace class potentials, and estimate the discrete spectrum in terms of the moments of $\xi(\lambda)$ and the potential. Moreover, we prove the limiting absorption principle. These results will be published in [1].

Keywords: discrete Schrödinger operator, inverse problem, trace formula

[1] Annales Henri Poincare, 2012