Absolutely continuous spectrum for some Schrödinger operators on graphs

R. Froese
Department of Mathematics
University of British Columbia
#121 - 1984 Mathematics Road
Vancouver, British Columbia V6T 1Z2, Canada

Abstract

We prove existence of absolutely continuous spectrum for a class of Schrödinger operators on graphs. The graphs we consider include trees and graphs obtained from trees by adding edges. A typical potential that we can handle can have arbitrary fluctuations, within some bounds, in the radial direction, if it satisfies a compactness condition in the transverse direction. Our technique involves writing the Greens function as the limit of fixed points of dynamical systems on the Siegel upper half space. These dynamical systems generalize the familiar one dimensional transfer matrix formalism, and can be thought of as a discrete analogue of the Ricatti equation satisfied by the Dirichlet to Neumann map. This is joint work with David Hasler and Wolfgang Spitzer.