Constructing Schrödinger operators with prescribed eigenvalues

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In this talk I shall present recently developed techniques to construct nonselfadjoint Schrödinger operators with prescribed discrete eigenvalues. The first method is used to add one more eigenvalue to the spectrum of a given Schrödinger operator. By iterating the procedure, one can construct infinitely many eigenvalues that accumulate to a prescribed point of the essential spectrum, the non-negative reals, or even accumulate at every point of the essential spectrum. The second technique is used to perturb an eigenvalue off the essential spectrum by adding a certain compactly supported complex potential. This method has been used in a recent joint work with Jean-Claude Cuenin to construct a counterexample to the Laptev-Safronov conjecture, which stipulates that the discrete eigenvalues are bounded in modulus by the L^p norm of the potential (for a certain range of p).