On the discrete eigenvalues of Schrödinger operators with complex potentials

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In this talk I shall present constructions of Schrödinger operators with complex-valued potentials whose spectra exhibit interesting properties. One example shows that for sufficiently large p, namely $p > (d + 1)/2$ where d is the dimension, the discrete eigenvalues need not be bounded by the L^p norm of the potential. This is a counterexample to the Laptev–Safronov conjecture (Comm. Math. Phys. 2009). Another construction proves optimality (in some sense) of generalisations of Lieb–Thirring inequalities to the non-selfadjoint case - thus giving us information about the accumulation rate of the discrete eigenvalues to the essential spectrum.
This talk is based on joint works with Jean-Claude Cuenin and Frantisek Stampach.