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Spectral decomposition of some non-self-adjoint operators

We will consider in this talk non-self-adjoint operators in Hilbert spaces given as relatively compact perturbations of a self-adjoint operator. Typical examples are Schrödinger operators with bounded, complex potentials vanishing at infinity. We will describe abstract conditions insuring that the Hilbert space admits a direct sum decomposition into H-invariant subspaces, generalizing the well-known spectral decomposition of self-adjoint operators in terms of their spectral measures. A central role in the talk will be played by spectral singularities, an abstract notion corresponding to that of real resonances for Schrödinger operators. We will also present a useful regularized functional calculus for non-self-adjoint operators.

This is joint work with Nicolas Frantz