Non-accretive Schrödinger operators and exponential decay of their eigenfunctions

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We consider non-self-adjoint electromagnetic Schrödinger operators on arbitrary open sets with complex scalar potentials whose real part is not necessarily bounded from below. Under a suitable sufficient condition on the potentials, we introduce a Dirichlet realization as a closed densely defined operator with non-empty resolvent set and show that the eigenfunctions corresponding to discrete eigenvalues satisfy an Agmon-type exponential decay. Remarks on the spectral convergence of domain truncations and completeness of eigenfunctions will be given.

The talk is based on:

[1] D. Krejčiřík, N. Raymond, J. Royer and P. Siegl: *Non-accretive Schrödinger operators and exponential decay of their eigenfunctions*, Israel Journal of Mathematics, 221, (2017) 779-802

[2] S. Bögli, P. Siegl, and C. Tretter: *Approximations of spectra of Schrödinger operators with complex potentials on $\mathbb{R}^d$*, Communications in Partial Differential Equations 42, (2017), 1001-1041