Spectral cluster bounds for orthonormal functions

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The topic of my talk are functional inequalities for systems of orthonormal functions. One wants to have an optimal dependence of the constant on the number of functions involved. In this talk we focus on so-called spectral cluster bounds, which are concerned with L^p norms of (linear combinations of) eigenfunctions of the Laplace-Beltrami operator on a compact manifold without boundary. I will review what is known in the case of a single function and for systems of orthonormal functions, then I will present some new results for operators with non-smooth coefficients or on manifolds with boundary.

The talk is partly based on joint ongoing works with Ngoc Nhi Nguyen and Xiaoyan Su.