

Eigensystem of a perturbation of a self-adjoint operator with discrete spectrum

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Abstract: We analyze perturbations $T + B$ of a self-adjoint operator in a Hilbert space with discrete spectrum. In particular it is shown that eigensystem of an L^2 -perturbed harmonic oscillator operator is an unconditional basis. Essential tools are discrete Hilbert transform and estimates of Hermite functions and eigenfunctions of Schroedinger operator with polynomial potentials. This is a joint work with James Adduci; see arXiv 0912.2722 and 1104.0915.