On an estimate in the subspace perturbation problem

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We study the problem of variation of spectral subspaces for linear self-adjoint operators under an additive perturbation. The aim is to find the best possible upper bound on the norm of the difference of two spectral projections associated with isolated parts of the spectrum of the perturbed and unperturbed operators in terms of the strength of the perturbation.

In our approach, we formulate a constrained optimization problem on a finite set of parameters, whose solution gives an estimate on the norm of the difference of the corresponding spectral projections. In particular, this estimate is stronger than the one recently obtained by Albeverio and Motovilov in [arXiv:1112.0149v2 (2011)].