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Title: Bounds for the spectrum of a two-parameter eigenvalue problem in a Hilbert space

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We consider the two-parameter eigenvalue problem $T_m v_m - \mu_1 v_m - \mu_2 A_m v_m = 0$ $(m = 1, 2)$, where T_m, A_m are compact operators in a Hilbert space; $\mu_1, \mu_2 \in \mathbb{C}$. Various two-parameter eigenvalue problems for differential equations can be reduced to that problem. Bounds for the spectral radius and imaginary parts of the eigenvalues of the considered problem are suggested. It is shown that the main result of the paper is sharp. An illustrative example is given. Our main tool is the recent norm estimates for the resolvent of a Schatten–von Neumann operator on the tensor product of Hilbert spaces.

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