

A sharp multiplier theorem for a perturbation-invariant class of Grushin operators of arbitrary step

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Abstract. We prove a multiplier theorem of Mihlin–Hörmander type for operators of the form $-\Delta_x - V(x)\Delta_y$ on $\mathbb{R}_x^{d_1} \times \mathbb{R}_y^{d_2}$, where $V(x) = \sum_{j=1}^{d_1} V_j(x_j)$, the V_j are perturbations of the power law $t \mapsto |t|^{2\sigma}$, and $\sigma \in (1/2, \infty)$. The result is sharp whenever $d_1 \geq (1+\sigma)d_2$. The proof hinges on precise estimates for eigenvalues and eigenfunctions of one-dimensional Schrödinger operators, which are stable under perturbations of the potential. Based on joint work with Alessio Martini: arxiv:1712.03065

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