$T1$ criteria for generalised Calderón-Zygmund type operators on Hardy and BMO spaces associated to Schrödinger operators and applications

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Abstract. Suppose $L = -\Delta + V$ is a Schrödinger operator on $\mathbb{R}^n$ with a potential V belonging to certain reverse Hölder class RH_σ with $\sigma \geq n/2$. The main aim of this paper is to provide necessary and sufficient conditions in terms of $T1$ criteria for a generalised Calderón-Zygmund type operator with respect to L to be bounded on Hardy spaces $H_L^p(\mathbb{R}^n)$ and on BMO type spaces $\text{BMO}_L^\alpha(\mathbb{R}^n)$ associated with L. We give applications to several singular integral operators associated to L including the Riesz transforms $\nabla L^{-1/2}$, $\nabla^2 L^{-1}$, $V^{1/2}L^{-1/2}$ and VL^{-1}.