

ABSTRACT

**ELLIPTIC OPERATORS WITH UNBOUNDED DIFFUSION
COEFFICIENTS PERTURBED BY INVERSE SQUARE POTENTIALS IN
 L^p -SPACES**

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In this joint work with S. Fornaro and A. Rhandi, we give sufficient conditions on $\alpha \geq 0$ and $c \in \mathbb{R}$ ensuring that the space of test functions $C_c^\infty(\mathbb{R}^N)$ is a core for the operator

$$L_0 u = (1 + |x|^\alpha) \Delta u + \frac{c}{|x|^2} u =: Lu + \frac{c}{|x|^2} u,$$

and L_0 with suitable domain generates a quasi-contractive and positivity preserving C_0 -semigroup in $L^p(\mathbb{R}^N)$, $1 < p < \infty$. The proofs are based on some L^p -weighted Hardy's inequality and perturbation techniques.