WEIGHTED HARDY'S INEQUALITY AND THE KOLMOGOROV EQUATION PERTURBED BY AN INVERSE-SQUARE POTENTIAL

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Abstract. In this talk we give sufficient and necessary conditions for the existence of a weak solution of a Kolmogorov equation perturbed by an inverse-square potential. More precisely, using a weighted Hardy's inequality with respect to an invariant measure μ, we show the existence of the semigroup solution of the parabolic problem corresponding to a generalized Ornstein-Uhlenbeck operator perturbed by an inverse-square potential in $L^2(\mathbb{R}^N, \mu)$. In the case of the symmetric Ornstein-Uhlenbeck operator we obtain an instantaneous blowup.