

# SCHRÖDINGER PERTURBATIONS OF TRANSITION DENSITIES

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We prove a 4G Theorem for the Gaussian kernel, the inequality which is a non-trivial extension of the so called 3G Theorem ([2], [1]) and a counterpart of the 3P Theorem ([3], [4]) (as well known, 3P fails in its primary form for the Gaussian kernel). Furthermore, we present a new method of estimating Schrödinger perturbations of general transition densities, which applies to the Gaussian kernel.

## REFERENCES

- [1] K. Bogdan, W. Hansen, and T. Jakubowski. Time-dependent Schrödinger perturbations of transition densities. *Studia Math.*, 189 (3):235–254, 2008.
- [2] K. Bogdan and T. Jakubowski. Estimates of heat kernel of fractional Laplacian perturbed by gradient operators. *Comm. Math. Phys.*, 271 (1):179–198, 2007.
- [3] M. Cranston, E. Fabes, and Z. Zhao. Conditional gauge and potential theory for the Schrödinger operator. *Trans. Amer. Math. Soc.*, 307(1):171–194, 1988.
- [4] W. Hansen. Global comparison of perturbed Green functions. *Math. Ann.*, 334(3):643–678, 2006.