

On necessary and sufficient conditions for Gaussian estimates of elliptic operators subject to mixed boundary conditions

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Given an open subset in the Euclidean space, we consider divergence form operators with bounded, measurable and complex coefficients subject to mixed boundary conditions. We find equivalent conditions under which the kernel of the semigroup generated by the divergence form operator is Hölder continuous and satisfies pointwise Gaussian upper bounds. The geometric assumptions reach far beyond the Lipschitz class and we do not impose any condition on the interface between Dirichlet and Neumann part.