SOME INEQUALITIES CONCERNING DIRICHLET FORMS OF STABLE PROCESSES

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We will present sufficient conditions on the kernel k for the comparability of the following quadratic forms:

$$\mathcal{E}(u) := \int_D \int_D \frac{(u(x)-u(y))^2}{|x-y|^{d+\alpha}}\,dy\,dx,$$
$$\mathcal{E}^k(u) := \int_D \int_D \frac{(u(x)-u(y))^2}{|x-y|^{d+\alpha}} k(x-y)\,dy\,dx.$$

We will show some applications of that fact. We will also present an extension of the comparability theorem to weighted forms:

$$\mathcal{E}_\phi(u) := \int_D \int_D \frac{(u(x)-u(y))^2}{|x-y|^{d+\alpha}} (\phi(y)\wedge\phi(x))\,dy\,dx,$$
$$\mathcal{E}^k_\phi(u) := \int_D \int_D \frac{(u(x)-u(y))^2}{|x-y|^{d+\alpha}} (\phi(y)\wedge\phi(x)) k(x-y)\,dy\,dx.$$

The results are joint work with Moritz Kassmann.