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Title: Evolution equations with fractional-order operators

Abstract: When A is a closed, densely defined operator in $L_q(\Omega)$, $\Omega \subset R^n$ and $1 < q < \infty$, the heat problem for $t \in I = (0, T)$,

$$d_t u + Au = f \text{ on } \Omega \times I, u|_{t=0} = 0,$$

is said to have maximal L_q-regularity, when for any $f \in L_q(\Omega \times I)$ there is a unique solution u such that $d_t u$ and Au are bounded by f in $L_q(\Omega \times I)$-norm. We study this question when A is the Dirichlet realization P_D of a $2a$-order strongly elliptic, EVEN pseudodifferential operator P generalizing the fractional Laplacian $(-\Delta)^a$, $0 < a < 1$. The heat problem was shown in 2018 to have maximal L_q-regularity when P is x-independent with real homogeneous symbol. We can now extend this to a large class of x-dependent, nonselfadjoint cases, by perturbation methods involving the concept of R-boundedness. (Joint work with Helmut Abels.)