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Carleson measures and potentials defined in spaces of homogeneous type. (Russian. English summary) Zbl 0768.42012

Soobshch. Akad. Nauk Gruz. SSR 135, No. 3, 505-508 (1989).

Let (X, ρ, μ) be a space of homogeneous type (with quasimetric ρ and measure μ). For $0 < \gamma < 1$, consider the following operator on functions on X (its values are functions on $X \times [0, \infty)$):

$$(T_\gamma f)(x,t) = \int_X f(y)[\mu\{u : \rho(x,u) \le \rho(x,y)\} + t]^{\gamma-1} d\mu(y).$$

The author gives a complete description of the measures β on $X \times [0, \infty)$ such that T_γ maps $L^p(X, \mu)$ into $L^q(X \times [0, \infty), \beta)$. Also, a necessary and sufficient condition on the pair (w, β) is given for the same operator to map the weighted space $L^{p,s}(X, \omega d\mu)$ into $L^{q,\infty}(X \times [0, \infty), \beta)$.

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MSC:

Cited in **1** Document

42B25	Maximal functions, Littlewood-Paley theory
46E30	Spaces of measurable functions (L^p-spaces, Orlicz spaces, Köthe function spaces, Lorentz spaces, rearrangement invariant spaces, ideal spaces, etc.)
47B38	Linear operators on function spaces (general)
31B15	Potentials and capacities, extremal length and related notions in higher dimensions
43A85	Harmonic analysis on homogeneous spaces

Keywords:

weighted estimates; Carleson measures; potential type operator; space of homogeneous type; weighted space