

ON ANALYTIC SEMIGROUP GENERATORS INVOLVING CAPUTO FRACTIONAL DERIVATIVE

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Abstract

Our investigations are motivated by the well-posedness problem of some dynamical models with anomalous diffusion described by the Caputo spatial fractional derivative of order $\alpha \in (1, 2)$. Using the reciprocal approach we establish the form of an analytic semigroup generator involving the Caputo fractional derivative under various boundary conditions. In particular, the results simplify those known from literature obtained basing on the theory of fractional Sobolev spaces.

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