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Fundamental solution of a loaded second-order parabolic equation with constant coefficients.

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Summary: We study a second-order partial differential equation containing fractional derivatives with respect to one of the two independent variables. We construct a fundamental solution of this equation, analyze its properties, and derive a general representation of solutions in a rectangular domain. It follows from this representation that the presence of a lower fractional derivative in the equation may affect the well-posedness of initial and initial-boundary value problems.

MSC:

35R11 Fractional partial differential equations

35A08 Fundamental solutions to PDEs

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Keywords:

fundamental solution; loaded second-order parabolic equation; fractional derivatives

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