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A PROBLEM IN THE HALF-STRIP FOR FOURTH ORDER PARABOLIC EQUATION WITH TIME FRACTIONAL RIEMANN-LIOUVILLE DERIVATIVE

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In this work a fourth-order inhomogeneous parabolic equation with time fractional derivative is considered. The fractional derivative is understood in the sense of the Riemann-Liouville derivative. The boundary-value problem in the half-strip for equation under consideration is studied. The linearity of the problem allows reducing it to the solution of a homogeneous fourth order parabolic equation with a fractional derivative with respect to the time variable with a homogeneous initial condition and inhomogeneous boundary conditions. In this paper a fundamental solution for fourth-order parabolic equation with time fractional derivative in terms of the Wright function is presented, a representation of the solution of the problem is constructed and uniqueness of the solution in the class of fast growth functions is proved.

Keywords: Riemann – Liouville fractional derivative, fourth order parabolic equation, problem in the half-strip.

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