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On The Solution of the E.P.D. Equation Using Finite Integral Transformations

of

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Abstract: In this paper, a solution is given for the following initial boundary value problem: $\Delta u_{tt} + k/t + u_t + g(x, t) (t > 0) u(0, t) = u(a, t) = 0 u(x, 0) = f(x), u_t(x, 0) = 0$ where $x, a \in \mathbb{R}^n, t$ is the time variable, $k < 1, k \neq -1, -2, -3, \dots$ is a real parameter, Δ is the n dimensional Laplace operator, f and g real analytic functions. The equation in this problem is known as the nonhomogeneous Euler-Poisson-Darboux (E.P.D.) Equation. The solution is obtained using finite integral transformation technique and is the sum of two uniformly and absolutely convergent power series.

 [Keywords](#)
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