

NEW EXACT SOLUTIONS CORRESPONDING TO THE SECOND PROBLEM OF STOKES FOR SECOND GRADE FLUIDS

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Abstract

New exact solutions corresponding to the second problem of Stokes for second grade fluids have been established by the Laplace transform method. For large times, these solutions reduce to the well-known steady-state solutions. The required times to reach the steady-state for cosine and sine oscillations of the boundary are also determined. These times decrease if the frequency of the velocity increases.

Keywords: *Stokes' second problem; Second grade fluid; Exact solutions*