962-44-716 **Pedro M Jordan*** (pjordan@nrlssc.navy.mil), Code 7181, Naval Research Laboratory, Stennis Space Center, MS 39529, **Pratap Puri** (ppuri@math.uno.edu), Dept. of Mathematics, University of New Orleans, New Orleans, LA 70148, and **George Boros** (gboros@math.uno.edu), Dept. of Mathematics, University of New Orleans, New Orleans, LA 70148. *New classes of exact definite integrals derivable from Laplace transform methods.*

In this work, new classes of three and four-parameter definite integrals, that yield to exact evaluation, are presented. These integrals are generated using newly derived inverse Laplace transforms of exponential functions involving (doubly) nested square roots. Using these new inverses and other techniques from Laplace transform theory, it is shown that these integrals evaluate to simple closed-form expressions. In some cases, the results given here are then verified using independent analytical techniques. Moreover, special/limiting cases of the parameters are considered, some of which yield well-known expressions from classical analysis. In addition, asymptotic results for these integrals and inverses are also given. Lastly, the application of these integrals and inverses to MHD, dipolar, and micropolar viscous fluid flows are outlined and possible extensions of this research noted. (Received September 22, 2000)