

1012-35-49

Ronald B Guenther (guenth@math.oregonstate.edu), Department of Mathematics, Oregon State University, Corvallis, OR 97331, and **Enrique A Thomann*** (thomann@science.oregonstate.edu), Department of Mathematics, Oregon State University, Corvallis, OR 97331. *Fundamental Solution of linearizations of the time dependent Navier-Stokes equations in two and three spatial dimensions.*

A survey of properties of the fundamental solution of different linearizations of the time dependent Navier-Stokes equations will be presented. Special consideration will be given to the Stokes and Osseen problems. In these special cases, the fundamental solutions of the time dependent problems can be related, through an integration in time, to their steady counterparts. However, depending on the spatial dimension under consideration, a "centering" trick is required. The time dependent fundamental solutions is expressed in terms of Kummer, or confluent hypergeometric, functions from which asymptotic properties of the solutions are readily available. Applications to the solution of boundary value problems and to stochastic representations of the solutions of these linearized problems will be briefly discussed. (Received August 26, 2005)