1056-35-1783 **D. Palaniappan*** (palaniap@math.tamu.edu), Department of Mathematics, Texas A&M University, College Station, TX 77843-3368. *Computation of Green's functions via successive image theory.*

The use of Green's functions in mathematics, engineering, physics, and other related fields is well explained in the literature. However, the computation of Green's functions for a geometry of an arbitrary shape is still a difficult task and as a consequence not many explicit forms are known. In this presentation, a systematic technique leading to the computation of Green's functions for Laplace and biharmonic equations involving intersecting circular/spherical boundaries will be discussed. This technique, which uses successive image theory, yields exact, closed forms of such functions with Dirichlet, Neumann and mixed type boundary conditions. Some analytic forms for the Green's functions which have applications in electro- & magnetostatics and inviscid/viscous hydrodynamics will be shown to exemplify the efficacy of our approach. (Received September 22, 2009)