1064-65-400 **Nilima Nigam***, Dept. of Mathematics, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 2S6, Canada, and **Simon Gemmrich**. *Boundary integral equations on the sphere- discretization and applications.*

The study of PDEs evolving on surfaces has attracted much attention recently, particularly for applications in atmospheric and oceanic sciences, pattern formation and computational graphics. The resulting models lead to boundary value problems on the submanifolds with specified boundary data. In this talk we present recent work on integral equation reformulations of model boundary value problems on the sphere. Integral equations possess advantages over PDE descriptions of such models, including dimension reduction or when the boundary curve or data is highly irregular.

The double layer operator for the Laplace-Beltrami boundary value problem possesses properties which are analogous, but not identical, to the double layer operator for the Laplacian on the plane. Lipschitz curves need particular consideration in both cases. We elucidate some of these similarities and differences. We then present Galerkin discretization strategies and some preliminary results for integral equations arising in other application areas which lead to related PDE. (Received September 14, 2010)