1078-41-76   **J. D. Ward*** (`jward@math.tamu.edu`). *Kernel interpolation and approximation on manifolds.*
This talk will focus on kernel interpolation and approximation in a general setting. It turns out that for a wide class of compact, connected C^∞ Riemannian manifolds, including the important cases of spheres and $SO(3)$, the kernels obtained as fundamental solutions of certain partial differential operators generate Lagrange functions that are uniformly bounded and decay away from their center at a fast algebraic rate, and in certain cases, an exponential rate. This fact has important implications for interpolation, approximation and implementation of "cheap" computationally efficient bases, all of which will be discussed. The class of kernels considered in this talk include the restricted surface splines on spheres as well as surface splines for $SO(3)$, both of which have elementary closed form representations which are computationally implementable. The talk is based on some recent joint work with T. Hangelbroek, F.J. Narcowich, E. Fuselier, X. Sun and G. Wright. (Received November 21, 2011)