1078-65-394 **Grady B Wright*** (gradywright@boisestate.edu) and **Edward J Fuselier**. *Solving partial differential equations on surface with kernels.* Preliminary report.

Kernel methods such as those based on radial basis functions (RBFs) are becoming increasingly popular for numerically solving partial differential equations (PDEs) because they are geometrically flexible, algorithmically accessible, and can be highly accurate. There have been many successful applications of this technique to various types of PDEs defined on planar regions in two and higher dimensions, and more recently to PDEs defined on the surface of a sphere. In this talk we describe the first kernel method based on RBFs for numerically solving parabolic PDEs defined on more general surfaces, specifically on smooth, closed embedded submanifolds. Applications of this method to certain biologically relevant, non-linear reaction diffusion equations will be presented on various surfaces. (Received December 13, 2011)