1078-41-150 **Xingping Sun*** (xsun@missouristate.edu), 901 S. National Ave, Springfield, MO 65897. *The decay rate of the Lagrange basis functions and its applications.*

In dealing with approximation problems on spheres or other manifolds involving scattered data, some kernels methods have been proven to be efficient. In many cases, one studies approximating an unknown function by a finite dimensional subspace spanned by shifts of a prescribed kernel function. Utilizing the Lagrange basis functions is advantageous. Recently, Hangelbroak and his co-authors have discovered a large class of kernels for which the Lagrange basis functions have desirable decay rates. In some case, these functions decay exponentially with respect to the minimal separation of the data points. As an immediate application of this result, they showed that the interpolation and the least square operators are L_∞-bounded. In this presentation, we will show some further development in this direction. Among others, we will prove that a certain Bessel potential kernels also give rise to exponential decay of Lagrange basis functions. (Received December 04, 2011)