Michael McCourt - Statement of Intent to Collaborate

I have collaborated with the leads for this project, *Stable, Efficient, Adaptive Algorithms for Approximation and Integration*, for the past several years. During that time, my contributions have included regular research meetings, software development, conference presentations and supervision of undergraduate and graduate students. In the past three years we have made progress in improving the quality of Gaussian kernel based approximation, and we have developed a Matlab package which allows users to experiment with our algorithms. Some of the results of this research have already been published, and more recent results have been submitted for publication.

If this grant proposal is approved, I plan to continue my collaboration with both Dr. Fasshauer and Dr. Hickernell. We plan to further develop and refine our existing GaussQR package for “Stable” interpolation, and adapt aspects of it to emphasize the “Efficient” aspect of this proposal. The development of statistical tools for approximation methods, emphasizing the “Adaptive” aspect of this proposal, has already begun to mature and this collaborative effort will speed that process. By providing transportation funding, I will be able to work intensely for a short period with both the PIs of this project and their students so that they can become experts at using our software and potentially contribute to the growth of this project. Furthermore, my current research at the University of Colorado Denver on the spread of the Ebola epidemic in West Africa requires efficient approximation in a high dimensional space, and the results of this project would be immediately applicable to that work.

