

∞ -Variate Integration

Greg Wasilkowski, University of Kentucky

We present recent results on efficient approximation of integrals with infinitely many variables. We provide new concepts of worst case truncation and superposition dimensions and show that, under modest error demands, these dimensions are very small for functions from weighted tensor product spaces. We also present Multivariate Decomposition Method that is almost as efficient as quadratures for univariate problems. The presentation is based on papers co-authored with A. Gilbert, M. Gnewuch, M. Hefter, P. Kritzer, F. Y. Kuo, F. Pillichshammer, L. Plaskota, K. Ritter, I. H. Sloan, and H. Woźniakowski. Three of the papers were either completed or initiated at ICERM, during the Fall 2014 Semester.