1030-65-358 **Fred J Hickernell*** (hickernell@iit.edu), Applied Math, Rm E1-208, Illinois Institute of Technology, 10 W. 32nd St., Chicago, IL 60616. *Breaking the Curse of Dimensionality with Lattice Designs.*

Numerical integration and approximation in high dimensions suffers from a curse of dimensionality when product rules are used. Namely, the convergence rate is $O(n^{-r/d})$, where r represents the smoothness of the function being integrated or approximated, and d is the dimension. Convergence rates that are independent of d may be obtained with better designs, such as integration lattices. This talk reviews some results for numerical integration and presents recent results from numerical approximation. (Received August 06, 2007)