

QMC Opening Workshop
August 28-September 1, 2017

Lecture: *Introduction to Quasi-Monte Carlo*

Speaker: Art Owen

Abstract:

A fundamental numerical problem in many sciences is to compute integrals. These integrals can often be expressed as expectations and then approximated by sampling methods. Monte Carlo sampling is very competitive in high dimensions, but has a slow rate of convergence. One reason for this slowness is that the MC points form clusters and gaps. Quasi-Monte Carlo methods greatly reduce such clusters and gaps, and under modest smoothness demands on the integrand they can greatly improve accuracy. This can even take place in problems of surprisingly high dimension. This talk will introduce the basics of QMC and randomized QMC. It will include discrepancy and the Koksma-Hlawka inequality, some digital constructions and some randomized QMC methods that allow error estimation and sometimes bring improved accuracy.

