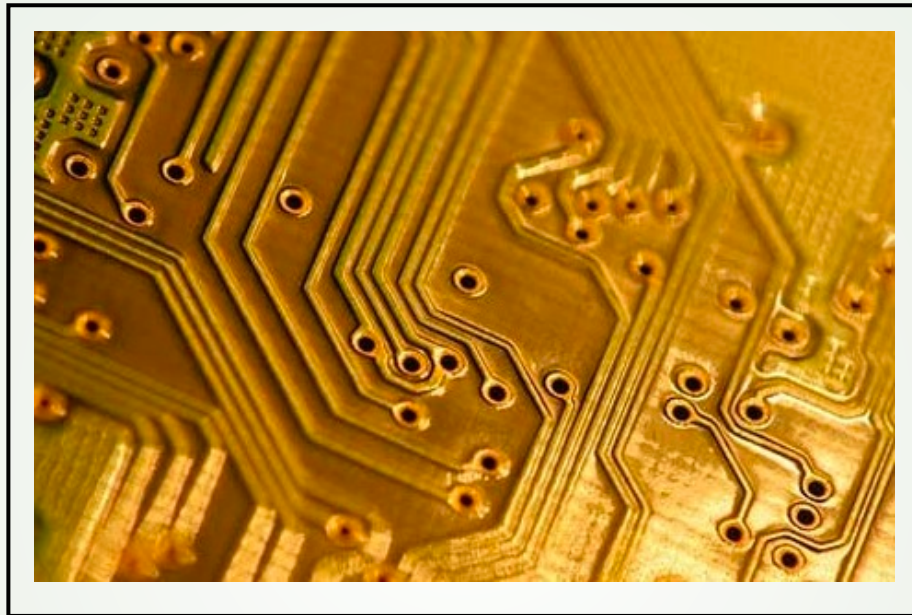




UCCS Math Department Colloquium Series

# DISCRETE INTEGRABLE SYSTEMS

PRESENTED BY DR. KENICHI MARUNO



| Thursday April 11, 2013 | 12:30 PM | UC 307 |

**ABSTRACT:** After the monumental works of Ablowitz-Ladik and Hirota in 1970s, the study of discrete integrable systems has received much attention in various fields such as mathematical physics, numerical algorithms, statistical physics, discrete differential geometry, special functions, combinatorics and cellular automata. Recent intensive studies revealed that mathematical structures of discrete integrable systems are richer than those of continuous integrable systems.

Recently, we have investigated integrable discretizations of nonlinear partial differential equations in which singularities of solutions exist. For PDEs in this class, we obtained discrete integrable systems of self-adaptive moving mesh type which can be used for numerical simulations of nonlinear PDEs. A geometric approach is effective to construct self-adaptive moving mesh discrete integrable systems. In this talk, I will review recent studies of self-adaptive moving mesh discrete integrable systems.