Applied and Computational Mathematics Seminar

Title: Elastic chains and the standard map: An approach to spatial chaos

Speaker: Gyorgy Karolyi (University of Aberdeen)

Date: Thu 5th June 2008 at 2:15PM

Location: Mathematical Sciences Seminar Room

Abstract: Complex spatial configurations of DNA, coiled plant tendrils and buckled slender engineering structures raise the question whether they can be characterised by tools borrowed from dynamical systems. Through a seemingly simple problem, the buckling of an elastic linkage, we explore the relationship between chaos and spatial chaos, and show how symbolic dynamics can describe the buckling configurations of linkages. We find that the classical invariants (symmetries, nodes, stability) used to label buckled states are all easily computed from a symbolic dynamics of finite length and infinite depth.