Destruction of transport barriers in nontwist map models with and without spatial symmetry

ALEXANDER WURM, Western New England College — Nontwist maps are simple models for degenerate Hamiltonian systems that describe, e.g., magnetic field lines in toroidal plasma devices with reversed magnetic shear profile. As numerically easily accessible systems, these maps can be used to gain understanding of basic field line features, such as the breaking of transport barriers represented by shearless invariant tori. One open question is the effect of symmetry on the details of the breakup of shearless invariant tori. Using Greene’s residue criterion as an indicator of torus breakup, I study the breakup of shearless invariant tori with noble winding numbers in nontwist maps with different symmetry properties.