Periodic orbit theory of two coupled Tchebyscheff maps
DOMENICO LIPPOLIS, Georgia Institute of Technology, CARL PHILIP DETTMANN, Bristol University (UK) — Coupled map lattices have been widely used as models in several fields of physics, such as chaotic strings, turbulence, and phase transitions, as well as in other disciplines, such as biology (ecology, evolution) and information processing. This work investigates properties of periodic orbits in two coupled Tchebyscheff maps. Then zeta function cycle expansions are used to compute dynamical averages appearing in Beck’s theory of chaotic strings. The results show close agreement with direct simulation for most values of the coupling parameter, and yield information about the system complementary to that of direct simulation.