

**PORCUPINE-LIKE HORSEHOES: TRANSITIVITY,
LYAPUNOV SPECTRUM, AND
PHASE TRANSITIONS**

LORENZO DÍAZ

(Catholic University of Rio de Janeiro)

We discuss simple, but representative, examples of local diffeomorphisms defined as one-step skew products modeled over a horseshoe map. These systems are naturally associated to a heterodimensional cycle. This cycle gives rise to a homoclinic class on which the diffeomorphism is topologically transitive and partially hyperbolic. It can be conveniently studied in terms of an iterated function system of interval maps that are genuinely non-contracting. These examples have topologically a rich fiber structure (justifying the porcupine terminology). Moreover, they exhibit a rich phase transition in the pressure function (coexistence of equilibrium states with positive entropies) that is associated to a gap in the spectrum of Lyapunov exponents in the central direction.

This is a joint work with K. Gelfert (UFRJ) and M. Rams (IM PAN Warsaw).