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Decoration invariants for horseshoe braids

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(joint work with André de Carvalho)

Understanding the mechanism of horseshoe creation in parameterised families of plane homeomorphisms is a natural step towards understanding the mechanism of general transitions to chaos in two-dimensional topological dynamics.

The *decoration conjecture* claims that the set of periodic orbits of the horseshoe is partitioned into families, each parameterised by a rational number, labelled by *decorations*, which are finite words in two symbols. When a horseshoe is created, the orbits in each family must be created monotonically, in the natural order given by the rational parameter. All orbits in a given family have the same *topological train track type*.

In this talk the conjecture will be described, a recent partial proof (for so-called *lone* decorations) will be discussed, and it will be explained how this gives rise to an infinite family of new braid conjugacy invariants for horseshoe braids.