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Models for dynamical systems in dimensions 1 and 2

A well-known result of Milnor and Thurston states that multimodal endomorphisms of the interval are semi-conjugate to maps which are piecewise linear with constant absolute slope (plcas) and that these “models” have the same topological entropy as the original endomorphisms. We will discuss “measurable pseudo-Anosov” surface homeomorphisms, which are, we believe, the correct 2-dimensional analogs of plcas interval endomorphisms and explain a conjectural analogue of the Milnor-Thurston theorem for sufficiently smooth surface diffeomorphisms. We will also mention connections with Teichmüller Theory and with geometry and topology of 3-manifolds.