Renormalization and Symmetry

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Abstract:
Consider the space of C^3 unimodal maps with critical exponent>1. Given a unimodal renormalization type, there is a Banach space of so-called internal structures. Each limit of renormalization has an internal structure. The tangent space at such an internal structure carries a representation of a countable subgroup of the circle. In the case of period doubling renormalization the group is formed by the dyadic rationals. The trivial part of this representation has dimension one. A deformation in the space of limits corresponds to a deformation of the internal structure. These internal deformations are fixed under the group action, they are in this sense symmetric. The central unstable subspace of renormalization at a limiting map is identified with the trivial part of the representation. In particular, the stable manifold of a period point of renormalization has co-dimension at most one.