

# Deformations of one-dimensional maps

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Perhaps one of the main features of one-dimensional dynamics (either real or complex) is that the theory of deformations is rich.

By this we mean that the topological classes of such maps often are infinite dimensional manifolds, but with finite codimension. Moreover for smooth families of maps inside a given topological class the associated family of conjugacies also moves in a smooth way.

The derivative of this family of conjugacies with respect to the parameter is called an infinitesimal deformation.

There are various applications in the study of renormalisation theory and linear response theory.

The theory of holomorphic motions and its uses in complex dynamics is one the most famous incarnations of this phenomena. Lyubich used infinitesimal deformation in a crucial way to study the quadratic-like maps and renormalization theory on this setting, as well as Avila, Lyubich and de Melo in the study of generic behaviour of real-analytic unimodal maps.

For real maps on the interval this phenomenon also occurs, but our current understanding is far behind the complex setting. We will discuss the recent developments obtained in joint work with several collaborators: Viviane Baladi, Amanda de Lima and Clodoaldo Ragazzo.