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Renormalization

In the last 25 years renormalization became one of the main tools in the theory of dynamical systems. In this mini-course we shall discuss renormalization theory in the simplest setting of circle dynamics, and present results in the cases of diffeomorphisms, critical circle maps, and maps with breaks. The last case corresponds to a particular type of nonlinear interval exchange transformations. We shall also discuss the relation between hyperbolicity of renormalizations and rigidity theory. We are not assuming previous knowledge of the subject. All basic concepts and constructions will be introduced in the course, together with examples illustrating these concepts.