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Renormalization Ideas in Real and Complex Dynamics

Since the 1970s, Renormalization has been a powerful idea in dynamics. Roughly speaking, it is an operator relating various scales of the dynamical and parameter spaces. It explains many Universality and Self-Similarity features observed experimentally. We will give an overview of the 30 years' long effort to lay a mathematical foundation for the Renormalization Theory, and of the many consequences that it entailed. Among them are advances in the Problem of Local Connectivity of the Mandelbrot set (MLC) and a proof of the Palis Conjecture on Regular or Stochastic Dynamics for one-dimensional unimodal maps.