

STABILITY OF THE DENJOY-WOLFF THEOREM

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The Denjoy-Wolff theorem states that the iterates of a holomorphic self-map of the unit disc converge locally uniformly to a point. However, the dynamics of compositions of multiple maps is not well understood. We are interested in the behaviour of compositions of a sequence of functions that itself converges to some limit function. Our goal is to examine under what conditions the dynamics of the composition sequence is similar to the dynamics of the iterates of the limit function. Intuitively, this question is about whether the Denjoy-Wolff theorem is stable under perturbations. As we shall see, stability is achieved in all but one case.