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Mikel de Viana^{*}, School of Mathematics, Georgia Institute of Technology, 686 Cherry Street, Atlanta, GA 30332, and Rafael de la Llave. Construction of whiskered invariant tori for fibered holomorphic dynamics via reducibility and almost reducibility.

We consider fibered holomorphic dynamics generated by the skew product

$$F: \mathbb{C}^n \times \mathbb{T}^d \longrightarrow \mathbb{C}^n \times \mathbb{T}^d$$
$$F(z, \theta) = (f(z, \theta), \theta + \omega)$$

which has as base the irrational translation T_{ω} on the torus \mathbb{T}^d .

F has no fixed point nor a periodic orbit: The invariant object that organizes the dynamics is an invariant torus $K : \mathbb{T}^d \to \mathbb{C}^n$. Given an approximately invariant torus K_0 , we construct an invariant torus K. The main technique is a KAM iteration in a-posteriori format.

The asymptotic properties of the derivative cocycle

$$A_{K_0}(\theta) := Df(K_0(\theta), \theta),$$

will play a crucial role. We assume that A_{K_0} is whiskered: There exists a splitting of \mathbb{C}^n in stable, unstable and central directions which are approximately invariant under A_{K_0} . In the central directions, we use the ideas of reducibility or almost-reducibility for A_{K_0} . Here we also encounter the lack-of-parameters problem, which we solve using an idea due to Moser. (Received August 24, 2015)