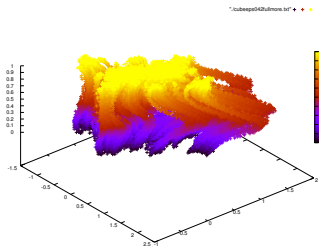


Whiskered invariant tori for fibered dynamics.

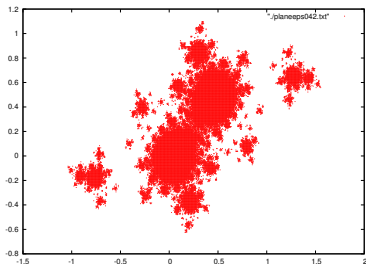
We consider *fibered holomorphic dynamics*, generated by the skew product over the translation T_ω :

$$\begin{aligned} \mathbf{F} : \mathbb{T}^d \times \mathbb{C}^n &\rightarrow \mathbb{T}^d \times \mathbb{C}^n \\ \mathbf{F}(\theta, z) &= (\theta + \omega, \mathbf{f}(\theta, z)) \end{aligned} \tag{1}$$

Where ω satisfies a non-resonance condition.



(a) Siegel set for
 $f(\theta, z) = az + z^2(1 + \epsilon \cos \theta)$



(b) A fiber $\theta = Cte$

Objective: Given an approximately F -invariant torus \mathfrak{T}_0 , compute an F -invariant torus \mathfrak{T} , near \mathfrak{T}_0 .

Methodology:

- A-posteriori format: Set up functional equations.
- Nash-Moser iteration: Asymptotics for the derivative cocycle.
- Melnikov Conditions.
- Lower dimensional tori ($d < n$): Add parameters (after **[Moser, 1967]**) which act as "counterterms".
- Use a-posteriori format to reduce the number of parameters (after **[Herman, Sevryuk]**).