

# On the Tongues of a Degree 4 Blaschke Product

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The family of Blaschke products  $B_a(z) = z^3(z - a)/(1 - \bar{a}z)$  is the rational analogous of the double standard family given by  $h(z) = e^{i\alpha} z^2 e^{\beta/2(z-1/z)}$ . Both families restrict, for certain parameters, to degree 2 coverings of the unit circle. This fact leads to some interesting phenomena like the existence of tongues in the parameter plane. These tongues were studied for the first time by M. Misiurewicz and A. Rodrigues [1] and are a degree 2 analogous of the Arnold Tongues.

During the talk we will introduce the concept of tongue for the Blaschke family and we will study what occurs around the tongues. We will also study some phenomena which take place because of not having an holomorphic dependence with respect to parameters, like the existence of small copies of the Mandelbar set (see [2]).

## References

- [1] M. Misiurewicz and A. Rodrigues *Double standard maps*, Comm. Math. Phys. **273** (2007), no. 1, 37–65.
- [2] W. Crowe, R. Hasson, P. Rippon and P. E. D. Strain-Clark *On the structure of the Mandelbar set* Nonlinearity **2** (1989), 541–553.