

## ROTATION NUMBER OF CONTRACTED ROTATIONS

ARNALDO NOGUEIRA

Institut de Mathématiques de Marseille

**Abstract.** Let  $0 < a < 1$ ,  $0 \leq b < 1$  et  $I = [0, 1)$ . We call *contracted rotation* the interval map  $\varphi_{a,b} : x \in I \mapsto ax + b \pmod{1}$ . Once the parameter  $a$  is fixed, we are interested in the family  $\varphi_{a,b}$ , where  $b$  runs on the interval  $I$ . We use the fact that, as in the case of circle homeomorphisms, any contracted rotation  $\varphi_{a,b}$  has a rotation number which depends only on the parameters  $a$  et  $b$ . We will discuss the dynamical and diophantine aspects of the subject. In particular, we will show that, if  $a$  and  $b$  are algebraic numbers, the rotation number is rational using a transcendence theorem about the value of the Hecke-Mahler series at an algebraic point.

*(The talk is based on a joint work with Michel Laurent.)*