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**Nathan Moreira dos Santos\*** (santosnathan@bol.com.br) and **Richard Urzúa-Luz** (rurzua@ucn.cl). *Minimal Homeomorphisms on low-dimension tori*. Preliminary report.

In this article we study minimal homeomorphisms (all orbits are dense) of the tori  $T^n$ ,  $n < 5$ . The linear part of a homeomorphism  $\varphi$  of  $T^n$  is the linear mapping  $L$  induced by  $\varphi$  on the first homology group of  $T^n$ . It follows from the Lefschetz fixed point theorem that 1 is an eigenvalue of  $L$  if  $\varphi$  minimal. We show that if  $\varphi$  is minimal and  $n < 5$  then  $L$  is quasi-unipotent, i.e., all the eigenvalues of  $L$  are roots of unity and conversely if  $L \in GL(n, \mathbb{Z})$  is quasi-unipotent and 1 is an eigenvalue of  $L$  then there exists a  $C^\infty$  minimal skew-product diffeomorphism  $\varphi$  of  $T^n$  whose linear part is precisely  $L$ . We do not know if these results are true for  $n > 4$ . We give a sufficient condition for a smooth skew-product diffeomorphism of a torus of arbitrary dimension to be smoothly conjugate to an affine transformation. (Received December 04, 2007)