Tilings and Anosov Diffeomorphisms

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A. Pinto and D. Sullivan [4] proved a one-to-one correspondence between: (i) C^{1+} conjugacy classes of expanding circle maps; (ii) solenoid functions and (iii) Pinto-Sullivan's dyadic tilings on the real line.
A. Pinto [1,3] introduced the notion of *golden tilings* and proved a one-to-one correspondence between (i) smooth conjugacy classes of Anosov diffeomorphisms, with an invariant measure absolutely continuous with respect to the Lebesgue measure, that are topologically conjugate to the linear automorphism $G(x, y) = (x + y, x)$, (ii) affine classes of golden tilings and (iii) solenoid functions.
Here we extend this last result and we exhibit a natural one-to-one correspondence between (i) smooth conjugacy classes of Anosov diffeomorphisms, with an invariant measure absolutely continuous with respect to the Lebesgue measure, that are topologically conjugate to the linear automorphism $G(x, y) = (ax+y, ax)$, where $a \in \mathbb{N}$, (ii) affine classes of tilings in the real line and (iii) solenoid functions. The solenoid functions give a parametrization of the infinite dimensional space consisting of the mathematical objects described in the above equivalences.

References and Literature for Further Reading

[1] A. A. Pinto, J. P. Almeida and A. Portela, Golden tilings, *submitted*.

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[3] A. A. Pinto, D. Rand and F. Ferreira, Fine Structures of Hyperbolic Diffeomorphisms, Springer Monographs in Mathematics, Springer Verlag, (2009).

[4] A. A. Pinto, D. Sullivan, The circle and the solenoid, Dedicated to A. Katok on the occasion of his 60th birthday, DCDS-A, **16** (2), 463-504, (2006).