Anosov diffeomorphisms on surfaces

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We consider a hyperbolic matrix

$$\tilde{A} = \left(\begin{array}{cc} a & b \\ c & d \end{array} \right) \in GL(2, \mathbb{Z})$$

and the hyperbolic toral automorphism $A : \mathbb{T} \to \mathbb{T}$ induced by $\tilde{A}$, where $\mathbb{T} = \mathbb{R}^2/\mathbb{Z}$. Then $\tilde{A}$ has two eigenvalues λ and μ such $|\lambda| > 1$ and $|\mu| < 1$. Furthemore, $\gamma = |\mu|$ is a quadratic surd and the continued fraction expansion of $\gamma = 1/(a_1 + 1/(a_2 + 1/\ldots))$ is M-periodic, for some $M = M(\gamma) \in \mathbb{N}$.

We prove the existence of a one-to-one correspondence between C^{1+} conjugacy classes of C^{1+} Anosov diffeomorphisms G that are topologically conjugate to A and pairs of C^{1+} *stable* and *unstable self-renormalizable sequences*.

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