The arithmetic of pseudo-Anosov mapping classes

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Abstract. Thurston observed that the expansion constant of a pseudo-Anosov mapping class is an algebraic integer. Later it was observed by Kenyon-Smillie and Gutkin-Judge that any subgroup of the mapping class group containing a pseudo-Anosov that stabilizes a Teichmueller disc is naturally isomorphic to a subgroup of $\mathrm{SL}(2, O_K)$ where K is the ring of intergers in the number field obtained by adjoining the expansion constant. We will expose these results using elementary symplectic linear algebra and briefly discuss further applications.