CONGRESO DE JÓVENES INVESTIGADORES
Real Sociedad Matemática Española
Universidad de Murcia, del 7 al 11 de Septiembre de 2015

Hyperbolic conjugacy classes in arithmetic lattices of $SL(2, \mathbb{R})$

Mikolaj Fraczyk[1]

The classical theorem of Latimer and MacDuffe ([LM]) states that there is a correspondence between $GL(n, \mathbb{Z})$-conjugacy classes (by the $GL(n, \mathbb{Z})$-conjugacy class of a matrix A we mean the set of matrices $\{X^{-1}AX | X \in GL(2, \mathbb{Z})\}$) with characteristic polynomial f and the ideal classes in the ring $\mathbb{Z}[t]/(f(t))$. A slight modification of the proof yields that $SL(n, \mathbb{Z})$-conjugacy classes are parametrized by the narrow ideal classes in $\mathbb{Z}[t]/(f(t))$. We show an analogue of this result for Γ-conjugacy classes of hyperbolic elements of $SL(2, \mathbb{R})$ with fixed characteristic polynomial, where Γ is a maximal arithmetic lattice in $SL(2, \mathbb{R})$. Next, by combining our results with a bound obtained by Dubickas and Konyagin in [DK] we deduce estimates (this approach was suggested in section 6. of [AB]) on the number of short geodesics on arithmetic hyperbolic surfaces.

Referencias

[LM] C.J. Latimer, C.C. MacDuffee, *A Correspondence Between Classes of Ideals and Classes of Matrices*, Annals of Math. , 34 (1933), pp. 313–316.

[DK] A. Dubickas, S.V. Konyagin, *On the number of polynomials of bounded measure*, Acta Arith. , 86 (1998), pp. 325–342.

[AB] M. Abert, N. Bergeron, I. Biringer, T. Gelander, N. Nikolov, J. Raimbault, I. Samet, *On the growth of L2-invariants for sequences of lattices in Lie groups* 11/2012, preprint.

[1]Départament de Mathématiques, Université Paris-Sud 11
91405 Orsay Cedex, France
mikolaj.fraczyk@gmail.com