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flow is not the geodesic flow (up to a finite cover), the action of  $\Gamma$  on  $S_u^1$  is faithful. For instance, we get in this way some examples of faithful actions of the fundamental group of some hyperbolic 3-manifolds on the circle.

## REFERENCES

- [1] ARNOLD, V. *Chapitres supplémentaires de la théorie des équations différentielles ordinaires*. Reprint of the 1980 edition. "Mir", Moscow, 1984.
- [2] BANYAGA, A. The structure of classical diffeomorphism groups. *Mathematics and its Applications 400*. Kluwer Academic Publishers Group, Dordrecht, 1997.
- [3] BARBOT, T. Caractérisation des flots d'Anosov en dimension 3 par leurs feuilletages faibles. *Ergodic Theory Dynam. Systems 15* (1995), 247–270.
- [4] BARGE, J. and E. GHYS. Cocycles d'Euler et de Maslov. *Math. Ann. 294* (1992), 235–265.
- [5] BAVARD, C. Longueur stable des commutateurs. *L'Enseign. Math. (2) 37* (1991), 109–150.
- [6] BEKLARYAN, L. A. About analogues of Tits' alternative for the homeomorphism group of the circle and real line. Preprint 2001 (in Russian).
- [7] BOREL, A. and N. WALLACH. Continuous cohomology, discrete subgroups, and representations of reductive groups. *Annals of Mathematical Studies 94* (1980).
- [8] BRIN, M. The chameleon groups of Richard J. Thompson: automorphisms and dynamics. *Inst. Hautes Études Sci. Publ. Math. 84* (1996), 5–33 (1997).
- [9] BRIN, M. and M. GUZMÁN. Automorphisms of generalized Thompson groups. *J. Algebra 203* (1998), 285–348.
- [10] BRIN, M. and C. SQUIER. Groups of piecewise linear homeomorphisms of the real line. *Invent. Math. 79* (1985), 485–498.
- [11] BROWN, K. *Cohomology of Groups*. Corrected reprint of the 1982 original. Graduate Texts in Mathematics 87. Springer-Verlag, New York, 1994.
- [12] BURGER, M. and N. MONOD. Bounded cohomology of lattices in higher rank Lie groups. *J. Eur. Math. Soc. (JEMS) 1* (1999), 199–235.
- [13] CANNON, J., W. FLOYD and W. PARRY. Introductory notes on Richard Thompson's groups. *L'Enseign. Math. (2) 42* (1996), 215–256.
- [14] CARTER, D. and G. KELLER. Bounded elementary generation of  $SL(n, \mathcal{O})$ . *Amer. J. Math. 105* (1983), 673–687.
- [15] CASSON, A. and D. JUNGREIS. Convergence groups and Seifert fibered 3-manifolds. *Invent. Math. 118* (1994), 441–456.
- [16] DEHORNOY, P. A fast method for comparing braids. *Adv. Math. 125* (1997), 200–235.
- [17] EISENBUD, D., U. HIRSCH and W. NEUMANN. Transverse foliations of Seifert bundles and self-homeomorphisms of the circle. *Comment. Math. Helv. 56* (1981), 638–660.

- [18] EPSTEIN, D. The simplicity of certain groups of homeomorphisms. *Compositio Math.* 22 (1970), 165–173.
- [19] EPSTEIN, D. and K. FUJIWARA. The second bounded cohomology of word-hyperbolic groups. *Topology* 36 (1997), 1275–1289.
- [20] FARB, B. and J. FRANKS. Group actions on one-manifolds, II: Extensions of Hölder's theorem. Preprint 2001.
- [21] FATHI, A., F. LAUDENBACH and V. POÉNARU. Travaux de Thurston sur les surfaces. Séminaire Orsay. Reprint of *Travaux de Thurston sur les surfaces*. Soc. Math. France, Paris, 1979. *Astérisque* 66–67 (1991), 1–286.
- [22] FENLEY, S. Anosov flows in 3-manifolds. *Ann. of Math. (2)* 139 (1994), 79–115.
- [23] FURSTENBERG, H. Boundary theory and stochastic processes on homogeneous spaces. In: *Harmonic Analysis on Homogeneous Spaces*. Proc. Symposia Pure Math., vol. 27 (1973), 193–229.
- [24] GABAI, D. Convergence groups are Fuchsian groups. *Ann. of Math. (2)* 136 (1992), 447–510.
- [25] GHYS, E. Groupes d'homéomorphismes du cercle et cohomologie bornée. The Lefschetz centennial conference, Part III (Mexico City, 1984), *Contemp. Math.* 58 III, Amer. Math. Soc., 1987, 81–106.
- [26] ——— Actions de réseaux sur le cercle. *Invent. Math.* 137 (1999), 199–231.
- [27] GHYS, E. and P. DE LA HARPE. Sur les groupes hyperboliques d'après Mikhael Gromov. Papers from the Swiss Seminar on Hyperbolic Groups held in Bern, 1988. *Progress in Mathematics* 83. Birkhäuser Boston, 1990.
- [28] GHYS, E. and V. SERGIESCU. Sur un groupe remarquable de difféomorphismes du cercle. *Comment. Math. Helv.* 62 (1987), 185–239.
- [29] GREENLEAF, F. *Invariant Means on Topological Groups and Their Applications*. Van Nostrand (1969).
- [30] GROMOV, M. Volume and bounded cohomology. *Inst. Hautes Études Sci. Publ. Math.* 56 (1983), 5–99.
- [31] DE LA HARPE, P. Free groups in linear groups. *L'Enseign. Math. (2)* 29 (1983), 129–144.
- [32] DE LA HARPE, P. and A. VALETTE. La propriété (T) de Kazhdan pour les groupes localement compacts (avec un appendice de Marc Burger). *Astérisque* 175 (1989).
- [33] HECTOR, G. and U. HIRSCH. *Introduction to the Geometry of Foliations. Part B. Foliations of Codimension One*. Second edition. Aspects of Mathematics, E3. Friedr. Vieweg & Sohn, Braunschweig, 1987.
- [34] HERMAN, M. Sur la conjugaison différentiable des difféomorphismes du cercle à des rotations. *Inst. Hautes Études Sci. Publ. Math.* 49 (1979), 5–233.
- [35] IVANOV, N. Foundations of the theory of bounded cohomology. (Russian) Studies in topology, V. *Zap. Nauchn. Sem. Leningrad. Otdel. Mat. Inst. Steklov (LOMI)* 143 (1985), 69–109, 177–178.
- [36] ——— The second bounded cohomology group. (Russian) *Zap. Nauchn. Sem. Leningrad. Otdel. Mat. Inst. Steklov (LOMI)* 167 (1988), *Issled. Topol.* 6, 117–120, 191.
- [37] JANKINS, M. and W. NEUMANN. Rotation numbers of products of circle homeomorphisms. *Math. Ann.* 271 (1985), 381–400.

- [38] JEKEL, S. A simplicial formula and bound for the Euler class. *Israel J. Math.* 66 (1989), 247–259.
- [39] JOHNSON, B. Cohomology in Banach algebras. *Mem. AMS* 127 (1972).
- [40] KAPLANSKY, I. *Lie Algebras and Locally Compact Groups*. The University of Chicago Press, 1971.
- [41] KATOK, A. and B. HASSELBLATT. *Introduction to the Modern Theory of Dynamical Systems*. Cambridge University Press, 1995.
- [42] KAWAKUBO, K. *The Theory of Transformation Groups*. Oxford University Press, 1991.
- [43] KOVAČEVIĆ, N. Examples of Möbius-like groups which are not Möbius groups. *Trans. Amer. Math. Soc.* 351 (1999), 4823–4835.
- [44] ——— Möbius-like groups of homeomorphisms of the circle. *Trans. Amer. Math. Soc.* 351 (1999), 4791–4822.
- [45] LIE, S. Theorie der Transformationsgruppen. *Math. Ann.* 16 (1880) 441–528; see also *Sophus Lie's Transformation Group Paper*. Translated by M. Ackermann, comments by R. Hermann. Math. Sci. Press, 1975.
- [46] MAGNUS, W., A. KARRASS and D. SOLITAR. *Combinatorial Group Theory. Presentations of Groups in Terms of Generators and Relations*. Second revised edition. Dover Publications, Inc., New York, 1976.
- [47] MALIKOV, F. and R. PENNER. The Lie algebra of homeomorphisms of the circle. *Adv. Math.* 140 (1998), 282–322.
- [48] MARGULIS, G. *Discrete Subgroups of Semisimple Lie Groups*. Springer-Verlag, 1991.
- [49] ——— Free subgroups of the homeomorphism group of the circle. *C. R. Acad. Sci. Paris Sér. I Math.* 331 (2000), 669–674.
- [50] MATSUMOTO, S. and S. MORITA. Bounded cohomology of certain groups of homeomorphisms. *Proc. Amer. Math. Soc.* 94 (1985), 539–544.
- [51] MILNOR, J. On the existence of a connection with curvature zero. *Comment. Math. Helv.* 32 (1958), 215–223.
- [52] ——— *Introduction to Algebraic K-theory*. Annals of Mathematics Studies 72. Princeton University Press; University of Tokyo Press, Tokyo, 1971.
- [53] ——— Remarks on infinite-dimensional Lie groups. In: *Relativity, Groups and Topology, II* (Les Houches, 1983), 1007–1057. North-Holland, Amsterdam-New York, 1984.
- [54] MNEIMNÉ, R. and F. TESTARD. *Introduction à la théorie des groupes de Lie classiques*. Collection Méthodes. Hermann, Paris, (1986).
- [55] MOKOBODSKI, G. Limites médiales. exposé de P.A. Meyer, Séminaire de probabilités, Strasbourg, 1971-72. *Springer L.N.M.* 321 (1973), 198–204.
- [56] MONTGOMERY, D. and L. ZIPPIN. *Topological Transformation Groups*. Interscience Publ., 1955.
- [57] NAVAS, A. Actions de groupes de Kazhdan sur le cercle. Prépublication ENS Lyon, 2001.
- [58] ONISHCHIK, A. and E. VINBERG. *Lie Groups and Algebraic Groups*. Springer-Verlag, 1990.

- [59] POINCARÉ, H. Mémoire sur les courbes définies par une équation différentielle. *Journal de Mathématiques* 7 (1881) 375-422 et 8 (1882) 251-296; *Œuvres de Henri Poincaré*. Tome I, Gauthier Villars.
- [60] — Les fonctions fuchsienues et l'arithmétique. *J. de mathématiques* 3 (1887) 405-464; *Œuvres de Henri Poincaré*. Tome III, Gauthier Villars.
- [61] SERRE, J.-P. Arbres, amalgames,  $SL_2$ . Avec un sommaire anglais. Rédigé avec la collaboration de Hyman Bass. *Astérisque* 46. Société Mathématique de France, Paris, 1977.
- [62] SOLODOV, V. V. Topological problems in the theory of dynamical systems. (Russian) *Uspekhi Mat. Nauk* 46 (1991), 93-114. Translation in *Russian Math. Surveys* 46 (1991), 107-134.
- [63] STEIN, M. Groups of piecewise linear homeomorphisms. *Trans. Amer. Math. Soc.* 332 (1992), 477-514.
- [64] STEINBERG, R. Some consequences of the elementary relations in  $SL_n$ . Finite groups—coming of age (Montreal, Que., 1982). *Contemp. Math.* 45, Amer. Math. Soc., Providence, R.I., (1985) 335-350.
- [65] TITS, J. Free subgroups in linear groups. *J. Algebra* 20 (1972), 250-270.
- [66] THURSTON, W. A generalization of the Reeb stability theorem. *Topology* 13 (1974) 347-352.
- [67] — *Three-Dimensional Geometry and Topology*. Vol. 1. Edited by Silvio Levy. Princeton Mathematical Series, 35. Princeton University Press.
- [68] — Three-manifolds, foliations and circles. Preprint.
- [69] WEIL, A. L'intégration dans les groupes topologiques et ses applications. *Actual. Sci. Ind.* 869 Hermann et Cie., Paris, 1940.
- [70] WITTE, D. Arithmetic groups of higher  $\mathbf{Q}$ -rank cannot act on 1-manifolds. *Proc. Amer. Math. Soc.* 122 (1994), 333-340.
- [71] WOOD, J. Bundles with totally disconnected structure group. *Comment. Math. Helv.* 46 (1971), 257-273.
- [72] ZIMMER, R. *Ergodic Theory and Semisimple Groups*. Birkhäuser, 1984.

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