Glöckner, Helge; Willis, George A.
Locally pro-$p$ contraction groups are nilpotent. (English) [Zbl 07436426]
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Summary: The authors have shown previously that every locally pro-$p$ contraction group decomposes into the direct product of a $p$-adic analytic factor and a torsion factor. It has long been known that $p$-adic analytic contraction groups are nilpotent. We show here that the torsion factor is nilpotent too, and hence that every locally pro-$p$ contraction group is nilpotent.

MSC:
22D05 General properties and structure of locally compact groups
22A05 Structure of general topological groups
20E18 Limits, profinite groups

Full Text: DOI arXiv

References:
[1] U. Baumgartner and G. A. Willis, Contraction groups and scales of automorphisms of totally disconnected locally compact groups, Israel J. Math. 142 (2004), 221-248. · Zbl 1056.22001
[2] P.-E. Caprace and N. Monod, Future directions in locally compact groups: A tentative problem list. New directions in locally compact groups, London Math. Soc. Lecture Note Ser. 447, Cambridge University, Cambridge (2018), 343-355. · Zbl 1398.22006
[3] H. Glöckner and G. A. Willis, Classification of the simple factors appearing in composition series of totally disconnected contraction groups, J. reine angew. Math. 643 (2010), 141-169. · Zbl 1196.22005
[4] H. Glöckner and G. A. Willis, Decompositions of locally compact contraction groups, series and extensions, J. Algebra 570 (2021), 164-214. · Zbl 1480.22003
[5] M. Grüninger, M. Horn and B. Mühlherr, Moufang twin trees of prime order, Adv. Math. 302 (2016), 1-24. · Zbl 1358.20023
[6] E. Hewitt and K. A. Ross, Abstract harmonic analysis. Vol. I, 2nd ed., Grundlehren Math. Wiss. 115, Springer, Berlin 1979.
[7] J. L. Kelley, General topology, Grad. Texts in Math. 27, Springer, New York 1975.
[8] C. D. Reid, Endomorphisms of profinite groups, Groups Geom. Dyn. 8 (2014), no. 2, 553-564. · Zbl 1303.20035
[9] C. D. Reid and P. R. Wesolek, Homomorphisms into totally disconnected, locally compact groups with dense image, Forum Math. 31 (2019), no. 3, 685-701. · Zbl 1420.22003
[10] W. H. Schikhof, Ultrametric calculus, Cambridge University, Cambridge 2006. · Zbl 1152.26005
[11] J.-P. Serre, Lie algebras and Lie groups, 2nd ed., Lecture Notes in Math. 1500, Springer, Berlin 1992.
[12] E. Siebert, Contractive automorphisms on locally compact groups, Math. Z. 191 (1986), no. 1, 73-90. · Zbl 0562.22002
[13] M. Stroppel, Locally compact groups, European Mathematical Society, Zürich 2006. · Zbl 1102.22005
[14] K. Tzanev, \((\mathbb{C}^* )\) algèbres de Hecke et K-théorie, PhD thesis, Université Paris 7, 2000.
[15] J. S. P. Wang, The Mautner phenomenon for $p$-adic Lie groups, Math. Z. 185 (1984), no. 3, 403-412. · Zbl 0539.22015
[16] A. Weil, Basic number theory, 3rd ed., Springer, New York 1974. · Zbl 0326.12001
[17] G. Willis, The structure of totally disconnected, locally compact groups, Math. Ann. 300 (1994), no. 2, 341-363. · Zbl 0811.22004
[18] J. S. Wilson, Profinite groups, The Clarendon, Oxford 1998.

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