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Abstracts of Short Communications and Posters

Section:

7. Lie Groups and Lie Algebras

1991 MS Classification: 22E20 (main), 20G25, 22D05
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Scale functions on p-adic Lie groups
Let G be a p-adic Lie group. Then G is a locally compact, totally disconnected group, to which [1] associates its scale function $s_G \colon G \to \mathbb{N}$. We show that s_G can be computed on the Lie algebra level. The image of s_G consists of powers of p. If G is a linear algebraic group over $\mathbb{Q}_p$, $s_G(x) = s_G(x_s)$ is determined by the semisimple part x_s of $x \in G$. For every finite extension $K/\mathbb{Q}_p$, the scale functions on G and $H := G(K)$ are related by $s_H|_G = s_G^{[K:\mathbb{Q}_p]}$.
References: 1. G. Willis, The structure of locally compact, totally disconnected groups, *Math. Ann.* **300** (1994), 341–363.
2. H. Glöckner, Scale functions on p-adic Lie groups, to appear.