

**Repovš, Dušan; Ščepin, Evgenij**

**A proof of the Hilbert-Smith conjecture for actions by Lipschitz maps.** (English)

[Zbl 0879.57025](#)

[Math. Ann.](#) 308, No. 2, 361-364 (1997).

The Hilbert-Smith conjecture asserts that among locally compact groups only Lie groups can act effectively on manifolds. It was proved to be equivalent to its special case when the acting group is the group of  $p$ -adic integers. *S. Bochner* and *D. Montgomery* proved this conjecture for groups acting on a manifold by diffeomorphisms [*Ann. Math.*, II. Ser. 47, 639-653 (1946; [Zbl 0061.04407](#))]. A simpler geometrical proof was obtained in 1991 by *D. Repovš*, *A. B. Skopenkov* and *E. V. Ščepin* [*Proc. Am. Math. Soc.* 124, No. 4, 1219-1226 (1996; [Zbl 0863.53004](#))].

The present paper makes further progress on this problem by presenting a proof of the Lipschitz version of the Hilbert-Smith conjecture, i.e., it is proved that the group of the  $p$ -adic integers ( $p$  any prime) cannot act effectively by Lipschitz maps on any closed manifold.

Reviewer: [D.Repovš \(Ljubljana\)](#)

**MSC:**

- [57S25](#) Groups acting on specific manifolds
- [54F65](#) Topological characterizations of particular spaces
- [26A24](#) Differentiation (real functions of one variable): general theory, generalized derivatives, mean value theorems

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