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Journal of Lie Theory 18 (2008) 915–917

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A Counterexample in the Dimension Theory of Homogeneous Spaces of Locally Compact Groups

We construct a locally compact group G and a closed subgroup H such that such that the quotient space G/H is connected and has weight $w(G/H) = 2^{\aleph_0}$ but fails to contain a cube $\mathbb{I}^{w(G/H)}$ of the same weight. This proves as incorrect an assertion made in Theorem 4.2 of K. H. Hofmann and S. A. Morris: Transitive actions of compact groups and topological dimension, J. of Algebra **234** (2000), 454–479.

Keywords: Homogeneous spaces of locally compact groups, Tychonoff cube, dimension.

MSC: 22D05