Witte, Dave
Measurable quotients of unipotent translations on homogeneous spaces. (English)

Let $G$ be a Lie group, $\Gamma$ be a lattice in $G$, $U$ be a nilpotent unipotent subgroup of $G$ and consider the $U$-action on $\Gamma \backslash G$ by translation on the right. There is a natural class of measurable quotients (factors) of the action, called double coset quotients, on quotient spaces of the form $\Lambda \backslash G / K$, where $\Lambda$ is a closed subgroup of $G$ containing $\Gamma$ and $K$ is a group of affine transformations of $\Lambda \backslash G$ (satisfying certain necessary conditions).

In the paper under review it is shown that when the $U$-action is ergodic any measurable quotient is a double coset quotient. The proof is via application of (a general version of) Ratner’s theorem on classification of invariant measures of actions of unipotent subgroups, to the diagonal action of $U$ on $\Lambda' \backslash G \times \Lambda' \backslash G$.

Ratner’s theorem as originally reported involved further conditions that $G$ be connected and $\Gamma$ be discrete. The author does not assume these conditions in his above-mentioned result and in that context he shows how Ratner’s theorem may be extended to the more general setting. Ratner’s published version does not involve $G$ being connected. The author’s alternative approach however seems to be of interest from a technical point of view, for other generalizations.

Reviewer: S.G.Dani (Bombay)

MSC:
28D15 General groups of measure-preserving transformations
37A99 Ergodic theory
22D40 Ergodic theory on groups

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References:


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