The author considers the problem of the metric classification of decreasing partitions of a Lebesgue space $Y$. Throughout he restricts himself to dyadic sequences. Let $Z_2$ be the group with two elements and let $\Gamma$ be the direct sum of a countable number of copies of $Z_2$. Associated with each $\Gamma$-action on $Y$ there is a decreasing sequence of partitions $\{\xi_i\}$, $\xi_k$ being the orbit partition under the action of the subgroup $\Gamma_k = \sum_{i=1}^{k} Z_2$. Conversely for each dyadic sequence $\{\xi_i\}$ there is a collection of $\Gamma$-actions that generate $\{\xi_i\}$ in the above way. The author defines the entropy of a $\Gamma$-action using Kirillov’s definition with respect to the increasing sequence of subgroups $\{\Gamma_k\}$ [A. A. Kirillov, Uspehi Mat. Nauk 22 (1967), no. 5 (137), 67–80; MR0217256]. He then shows that the entropies of any two actions that generate the same sequence of partitions differ by at most 1. The entropy of a sequence is then defined to be the supremum of the entropies of the corresponding $\Gamma$-actions.

By using Bernoulli $\Gamma$-actions with a two point state space the author shows that there are at least countably many nonisomorphic sequences of partitions, and he constructs dyadic sequences that are not generated by endomorphisms, i.e., there is no endomorphism $T$ such that $\xi_i = T^{-i} \varepsilon$. The paper concludes with the statement (without proof) that Bernoulli $\Gamma$-actions with the same entropy are isomorphic.

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