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**Robin D. Tucker-Drob\*** (rtuckerd@caltech.edu). *Ultraproducts of measure preserving actions and graph combinatorics.*

Given a sequence of standard measure spaces and a non-principal ultrafilter  $U$  on the natural numbers, the ultraproduct of these spaces with respect to  $U$  is defined, using the Loeb measure construction. We define on this space the ultraproduct action associated with a sequence of measure preserving actions of a countable group, and characterize the standard factors of this action. The methods are then applied to answer questions arising in graph combinatorics of group actions and in probability, and also to give a new proof that the Bernoulli shift action of a sofic group is sofic. This is joint work with C.T. Conley and A.S. Kechris. (Received August 23, 2011)