

Quasi-invariant means and Zimmer amenability

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Abstract: Consider a countable group acting on a countable set X by permutations. We give a necessary and sufficient condition for the action to have a quasi-invariant mean with a given cocycle. This can be viewed as a combinatorial analogue of the condition for the existence of a quasi-invariant measure in the Borel case given by Miller. Then we show a geometric condition that guarantees that the corresponding action on the Čech-Stone compactification is Zimmer amenable. The geometric condition (weighted hyperfiniteness) resembles Property A. We do not know the exact relation between the two notions, however, we can show that amenable groups and groups of finite asymptotic dimension are weighted hyperfinite. This is joint work with Gabor Elek.