

PROBABILISTIC IDENTITIES AND FREE PRO-P PRODUCTS OF PRO-P GROUPS

For a long time already, the study of word maps on groups is an engine to pose and discuss problems for mathematicians. Given a profinite group G and a non-trivial word w on k -letters, we denote by $P(G, w)$ the probability that G satisfies w , i.e. the normalized Haar measure of the k -tuples of elements that satisfy the word. We say that w is a probabilistic identity on G if the associated probability is positive. In 2016, M.Larsen and A.Shalev conjectured that a finitely generated profinite group that satisfies a probabilistic identity must satisfies some (in general different) identity.

After giving an introduction to the topic, I will present some new results regarding the Larsen-Shalev conjecture in the setting of free pro- p products of pro- p groups. These results are obtained with my two advisors M.Vannacci and T.Weigel.