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For a finitely generated group G there is a natural action of the group of automorphisms of the free group $\operatorname{Aut} F_n$ on generating n-tuples of G via Nielsen moves.
The set of all generating n-tuples of G can be identified with the set $\operatorname{Epi}(F_n, G)$. Currently I am interested in studying properties of the action $\operatorname{Aut} F_n \curvearrowright \operatorname{Epi}(F_n, G)$, such as:

- *Transitivity.* This question by B. Neumann and H. Neumann dates back to 1951, and most of the known results concern finite groups. We obtain transitivity results for the families of Grigorchuk groups, Gupta-Sidki groups and Heisenberg groups [2].
- *(Non)amenability.* This is a joint work with T. Nagnibeda. The question about (non)amenability is of particular interest in relation with the open question about Property (T) for $\operatorname{Aut} F_n$, $n \geq 4$ [1]. We prove nonamenability of the action $\operatorname{Aut} F_n \curvearrowright \operatorname{Epi}(F_n, G)$ for all $n \geq \max\{2, \operatorname{rank}(G)\}$ when G is indicable, and for all $n \geq \max\{3, \operatorname{rank}(G)\}$ when G is elementary amenable.

  Moreover, we establish a criterion for the action to be transitive and (non)amenable for relatively free (in some variety) groups.

References

[1] A. Lubotzky, I. Pak, *The product replacement algorithm and Kazhdan's property (T)*, Journal of the AMS 14 (2001), 347-363.

[2] A. Myropolska, *Andrews-Curtis and Nielsen equivalence relations on some infinite groups (Submitted).*

[3] I. Pak, *What do we know about the product replacement algorithm?*, Groups and computation, III, pp. 301–347, Ohio State Univ. Math. Res. Inst. Publ., 8, de Gruyter, Berlin, 2001.