

Applications of Stallings automata: old and new

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The theory of Stallings automata [3] provides a natural geometric representation of the subgroups of the free group and constitutes the modern approach to their study. Moreover, if the involved subgroups are finitely generated, then the corresponding automata are finite and well suited for algorithmic treatment.

This approach has become extremely fruitful, providing a continuous flow of results since its development some decades ago. In this talk, I will briefly review this construction and, if time permits, show some classical applications along with some belonging to my latest research in [1] and [2].

References

- [1] J. DELGADO AND P. V. SILVA, “*On the lattice of subgroups of a free group: complements and rank*”, *Journal of Groups, Complexity, Cryptology* Volume 12, issue 1 (Mar. 2, 2020).
- [2] J. DELGADO, E. VENTURA, AND A. ZAKHAROV, *Relative order and spectrum in free and related groups*, arXiv:2105.03798 [math] (May 2021).
- [3] J. R. STALLINGS, *Topology of finite graphs*, *Inventiones Mathematicae* 71, pp. 551–565 (Mar. 1983).