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Doron Puder

Institute for Advance Study

Detecting primitivity in the free group algebra.

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Abstract:

The free group algebra appears often as a major tool in dealing with problems about free groups. It is also a lovely object for its own sake, featuring many analogies with the free group: for example, it satisfies an analog of the Nielsen-Schreier theorem. Yet, while many algorithms exist for different problems in free groups, there are very few algorithms for basic problems in the free group algebra.

I plan to define the free group algebra, try to convince you it is a nice and interesting creature, and introduce a new algorithm for detecting whether a given element is "primitive" in a given ideal (what Whitehead's algorithm achieves in free groups).

Based on joint work with Matan Seidel and Danielle Ernst-West.