Dendric languages and the Finite Index Basis Property

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A dendric language is a subset of the free monoid that is factorial, i.e., for any of its elements all its factors are in the language as well, and such that the possible extensions of every of its elements are described by a graph which is a tree. Notorious examples of dendric languages are given by the well-known Sturmian sets and the coding of i.d.o.c. interval exchange transformations.

In this talk we use dendric languages to draw a path from Combinatorics on Words to Algebra of free groups, passing through Code Theory with a small break in Symbolic Dynamics.

We give several examples and results of such a class of languages. In particular we focus on some properties connecting the free monoid with the free group, proving that in a recurrent dendric language a finite bifix code is maximal in the language if and only if it is the basis of a subgroup of the free group.