

Institut für Diskrete Mathematik

Combinatorics Seminar

Friday 19th April 12:30

Online meeting (Webex)

The structure and density of (strongly) k -product-free sets in the free semigroup.

FREDERICK ILLINGWORTH

(University College London)

The *free semigroup* \mathcal{F} over a finite alphabet \mathcal{A} is the set of all finite words with letters in \mathcal{A} equipped with the operation of concatenation. A subset S of \mathcal{F} is *k -product-free* if no k words in S concatenate to another word in S . How dense can a k -product-free subset of \mathcal{F} be? What is the structure of the densest k -product-free subsets?

Leader, Letzter, Narayanan, and Walters proved that 2-product-free subsets of the free semigroup have density at most $1/2$ and asked for the structure of the densest sets. In this talk I will discuss the answer to their question as well as the answer (both density and structure) for general k . This generalises results of Łuczak and Schoen for sum-free sets in the integers although the methods used are quite different.

This is joint work with Lukas Michel and Alex Scott.

Meeting link:

<https://tugraz.webex.com/tugraz/j.php?MTID=m8500c46344212abf0fa37925da5ef9bf>

Joshua Erde, Mihyun Kang