

Málstofa í stærðfræði - Mathematics seminar
Raunvísindastofnun Háskólans, Science Institute, University of Iceland

Fyrirlesari - Speaker: Amy Glen, Háskólanum í Reykjavík.
The Mathematics Institute, Reykjavik University

Titill - Title: Crucial words for abelian powers

Tími - Time: Mánudaginn 12. jan. 2009, klukkan 15:00
Monday, January 12, 2009, 15:00 h

Staður - Place: Stofa 157 í VR II - in room 157 in VR II

Útdráttur – Abstract:

In 1961, Erdős asked whether or not there exist words of arbitrary length over a fixed finite alphabet that avoid patterns of the form XX' where X' is a permutation of X (called "abelian squares"). This problem has since been solved in the affirmative in a series of papers from 1968 to 1992. Much less is known in the case of "abelian k -th powers", i.e., words of the form $X_1X_2\dots X_k$ where X_i is a permutation of X_1 for $2 \leq i \leq k$.

In this talk, I will discuss "crucial words" for abelian k -th powers, i.e., finite words that avoid abelian k -th powers, but which cannot be extended to the right by any letter of their own alphabets without creating an abelian k -th power. More specifically, I will consider the problem of determining the minimal length of a crucial word avoiding abelian k -th powers. This problem has already been solved for abelian squares by Evdokimov and Kitaev (2004). I will present a solution for abelian cubes (the case $k = 3$) and state a conjectured solution for the case of $k \geq 4$.

This is joint work with Bjarni V. Halldórsson and Sergey Kitaev (Reykjavík University).