SCMS Seminar

WORD-REPRESENTABLE GRAPHS

LECTURE 1. THE BASICS.

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Time: 16: 00-17: 00. Monday, April 24, 2017

Venue: Room 2201, East Main Guanghua Tower, Handan Campus

Abstract: Suppose that w is a word and x and y are two distinct letters in w. We say that x and y *alternate* in w if after deleting in w all letters but the copies of x and y we either obtain a word $xyxy$... (Of even or odd length) or a word yxyx... (Of even or odd length). A graph $G= (V, E)$ is *word-representable* if there exists a word w over the alphabet V such that distinct letters x and y alternate in w if and only if (x, y) is an edge in E. For example, the 4-cycle labeled by 1, 2, 3 and 4 in clockwise direction, can be represented by the word 13243142.

Word-representable graphs generalize several classical classes of graphs, e.g. *3-colorable, comparability, subcubic and circle graphs.* Some basic questions to ask about these graphs are:
- Which graphs are word-representable?
- How many graphs on n vertices are word-representable?
- What is the minimum length of a word that represents a given graph?

The lectures will be dedicated to a comprehensive introduction to the theory of word-representable graphs, the main subject of the book "Words and graphs" recently published by Springer.