SCMS Seminar

WORD-REPRESENTABLE GRAPHS 2

LECTURE 2. SEMI-TRANSITIVE ORIENTATIONS AS THE MAIN TOOL IN THE THEORY OF WORD-REPRESENTABLE GRAPHS DISCOVERED SO FAR.

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Time: 16: 00-17: 00. Tuesday, April 25, 2017

Venue: Room 2213, 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.

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