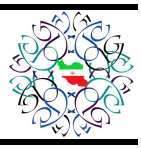
16th Iranian International Group Theory Conference

Shahid Rajaee Teacher Training University, Iran, 1-2 February 2024



# THE SYNCHRONISATION HIERARCHY FOR PERMUTATION GROUPS

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Abstract. The concept of a synchronising permutation group was introduced over 15 years ago as a possible way of approaching The Černý Conjecture from automata theory. Such groups must be primitive. In an attempt to understand synchronising groups, a whole hierarchy of properties for a permutation group has been developed, namely, 2-transitive groups, $\mathbb{Q}$I-groups, spreading, separating, synchronsing, and primitive. Many surprising connections with other areas of mathematics such as finite geometry, graph theory, and design theory have arisen in the study of these properties. In this talk I will discuss some of these connections and some recent results about where groups sit in the hierarchy. The talk includes joint work with John Bamberg, Saul Freedman, Jesse Lansdown and Gordon Royle.

2020 *Mathematics Subject Classification.* Primary: 20B15, 20B05; Secondary: 05C25.

*Key words and phrases.* Primitive groups, synchronising groups, spreading groups.