Divisible design graphs derived from collections of affine designs

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Abstract. A divisible design graph is a finite regular graph whose vertex set can be partitioned into classes of equal size, in such a way that the number of common neighbors of two distinct vertices depends only on whether they belong to the same or different classes.

In this talk, we present techniques for generating new infinite families of divisible design graphs derived from collections of affine designs. These collections are arranged according to either the Cayley table of a left quasigroup or based on the incidence matrix of a symmetric 2-design [1]–[5]. Several of the resulting graphs exhibit parameter sets that were previously unknown.

About the speaker. Vladislav V. Kabanov is a Chief Researcher in the Department of Algebra and Topology at the Krasovskii Institute of Mathematics and Mechanics (Ural Branch of the Russian Academy of Sciences) in Yekaterinburg, where he has worked since 1995. He also served as a professor at Ural Federal University from 1985 to 2016.

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