SEMINARIUM

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MAXIMAL DESIGNS AND CONFIGURATIONS

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We want to discuss a situation which typically is as follows. Given is a finite set $\mathcal{F}$ of objects called *figures*, and a symmetric irreflexive relation R on $\mathcal{F}$ (the *compatibility rule*) which specifies when two figures are compatible. An $(\mathcal{F}, R)$-configuration or simply a *configuration* is a set of pairwise compatible figures. A configuration C is *maximal* if there is no $f \in \mathcal{F}$, $f \notin C$ such that $f \cup C$ is also a configuration.

The *size* of a configuration is the number of its figures. An $(\mathcal{F}, R)$- configuration is *maximum* if it is maximal and contains the largest possible number of figures. Maximum configurations are sometimes called *maximum packings* or just *packings*.

The aim of this talk is to provide a unified view for, and a survey of, a class of problems that occur often in combinatorics, graph theory and related areas but also in "real life".