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Large graphs and other combinatorial structures

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A fundamental result in graph theory, Szemerédi's regularity lemma, tells us that large graphs can be described with a small amount of data when we are interested in certain types of problems. When we have a sequence of graphs whose orders tend to infinity, if their subgraph statistics are consistent, one can define a continuous object that is the limit of the sequence. These are the celebrated graph limits of Lovász and Szegedy. In this talk, we shall introduce and discuss some basic facts in these two approaches to the study of large graphs. Some other large combinatorial structures will also be considered.