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Jozsef Balogh, Bela Bollobas and Miklos Simonovits* (miki@renyi.hu). *New results in Erdos-Frankl-Rödl theory.*

The lecture will describe some new results in the Erdős-Frankl-Rödl theory, in which, for a family \mathcal{L} of forbidden graphs, we describe the typical structure of the n -vertex graphs not containing any $L \in \mathcal{L}$. The work itself is mostly joint work with J. Balogh and B. Bollobás. In our earlier works first we improved earlier estimates on the number of \mathcal{L} -free graphs, then, improving these results, we described the typical structure of \mathcal{L} -free graphs. Here we improve our earlier results in some particular cases, providing in some sense absolutely sharp results for the typical structure of \mathcal{L} -free graphs, in some particular cases.

We also formulate several related conjectures, open problems.

Here, in the Abstract we mention two important particular cases, one of them is the Octahedron Graph $O_6 = K(2, 2, 2)$, the other being the Petersen graph.

We shall also provide some more general results, containing the above two cases.

Among others, we prove the following results.

The vertex set of almost every O_6 -free graph can be partitioned into two classes of almost equal sizes, U_1 and U_2 , where the graph spanned by U_1 is a C_4 -free and that by U_2 is P_3 -free. (Received February 01, 2009)