Meeting: 1005, Newark, Delaware, SS 16A, Special Session on Probabilistic Paradigms in Combinatorics

1005-05-203 **Vera T. Sos*** (sos@renyi.hu), Renyi Institute, Budapest, Hungary, and **Miklos Simonovits** (miki@renyi.hu), Renyi Institute, Budapest, Hungary. *A hierarchy of randomness for graphs.*

We formulate four families of problem with which we aim at distinguishing *different levels of randomness*.

The first one is completely non-random, being the ordinary Ramsey-Turán problem and in the subsequent three problems we formulate some randomized variations of it. These four levels form a hierarchy, the main topic of this work.

We formulate very briefly (and informally) the four questions for a special case. The questions are as follows:

Fix a family of graphs $\mathcal{L}$ and an integer $r \geq 2$.

(DD) How many edges guarantee for a graph G_n that if we r-color its edges arbitrarily, we *always* find a monochromatic $L \in \mathcal{L}$?

(DR) How many edges guarantee for a graph G_n that in *almost all* r-edge-colorings, we find a monochromatic $L \in \mathcal{L}$?

(RD) How many edges guarantee for a *random graph* R_n?

(RR) How many edges guarantee for a random graph R_n *almost surely*, that r-coloring its edges at random, *almost all* the r-colorings contain a monochromatic $L \in \mathcal{L}$?

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