

Universality and randomness: results and conjectures

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Abstract: There are several categories in which a unique universal homogeneous object exists. The most known example, which is very popular in the theory of models, is the universal graph (Rado). It is much less known that the analogous situation takes place with Polish metric spaces. Such an object had been defined in 1924 by P. Urysohn. At the same time, the random graph in the sense of Erdős-Renji (and in a more general sense) is also with probability 1 a universal graph. It happens that for metric spaces we also can define a meaning of “random metric space” and prove that such a space with probability 1 is the Urysohn space. We developed some tools (matrix method) for studying such problems.