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INTERPRETATIONS OF DIFFERENCE SEQUENCES OF SOME COMBINATORIAL NUMBER SEQUENCES

The classical Bell numbers give the number of partitions of finite sets. Higher order difference sequences of the sequence of Bell numbers were investigated by several authors. In our talk, we collect some meanings of the numbers mentioned above including an interpretation published in Hungarian, therefore less known by the mathematical community, which we extend to study independent partitions of certain graphs.

We generalize some of these results to the difference sequences of the sequence of the so-called r -Bell numbers. We provide three interpretations: one related to enumerating set partitions having fixed largest singleton, another one in connection with the number of matchings in certain bipartite graphs, as well as the meaning about the number of independent partitions mentioned above.

If the blocks in the partition or the partition itself is ordered, then we obtain Bell–Lah and Fubini numbers, respectively. We extend our investigations for the difference sequences of the r -generalizations of these sequences.

This is joint work with Gábor Nyul.