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Nonrepetitive colorings and entropy compression method

A sequence is nonrepetitive if it does not contain two adjacent identical blocks. The remarkable construction of Thue asserts that 3 symbols are enough to build an arbitrarily long nonrepetitive sequence. It is still not settled whether the following extension holds: for every sequence of 3-element sets L_1, \dots, L_n there exists a nonrepetitive sequence s_1, \dots, s_n with s_i in L_i . We present an elementary proof that sets of size 4 suffice. The argument is perhaps the most instructive application of the so-called entropy compression method. Joint work with Jarosław Grytczuk and Jakub Kozik.