Title: The Density versions of the Hales-Jewett and Carlson-Simpson Theorems.

Abstract: The main part of this talk is devoted to the Density Hales-Jewett Theorem. The Hales-Jewett Theorem is one of the most representing theorems in Ramsey theory (see [4]). The so called Density Hales-Jewett Theorem consists the density version of the Hales-Jewett Theorem and it was first proved by H. Furstenberg and Y. Katznelson in 1991 using Ergodic Theory (see [3]). A combinatorial proof was discovered in 2012 and is contained in the Polymath paper (see [5]). We will also present a density version of a theorem due to T. J. Carlson and S. G. Simpson (see [1] and [2] for its density version) concerning the space of left variable words, which consists an extension of the Density Hales-Jewett Theorem.

References

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[4] A. H. Hales and R. I. Jewett, *Regularity and positional games*, Trans. Amer. Math. Soc., 106 (1963), 222-229.

[5] D. H. J. Polymath, *A new proof of the density Hales–Jewett theorem*, Ann. Math., 175 (2012), 1283-1327.