

In the last years, several authors have studied sparse and random analogues of a wide variety of results in extremal combinatorics. Very recently, due to the work of Balogh, Morris, and Samotij, and the work of Saxton and Thomason on the structure of independent sets on hypergraphs, several of these questions have been addressed in a new framework by using the so-called containers in hypergraphs.

In this talk I will present how to use this technology together with arithmetic removal lemmas due to Serra, Vena and Kral in the context of arithmetic combinatorics. We will show how to get sparse (and random) analogues of well-known additive combinatorial results even in the non-abelian situation.

This talk is based on a joint work with Oriol Serra (UPC-Barcelona) and Llus Vena (Charles University Praha).