

Logic Seminar

Averages of hypergraphs and higher arity stability

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Abstract: We show that k -ary functions giving the measure of the intersection of multi-parametric families of sets in probability spaces, e.g. $(x, y, z) \in X \times Y \times Z \mapsto \mu(P_{x,y} \cap Q_{x,z} \cap R_{y,z})$, satisfy a particularly strong form of hypergraph regularity. More generally, this applies to the (integral) averages of continuous combinations of functions of smaller arity. This result is connected to higher arity stability in (continuous) model theory. In relation to that, we demonstrate that all 3-hypergraphs embedding both into the half-simplex and into $\text{GS}(\mathbb{F}_3)$, the two known sources of failure of ternary stability, do satisfy an analogous regularity lemma – hence, unlike classical stability, strong ternary stability cannot be characterized simply by excluded hypergraphs.

Tuesday, October 21 at 3:00 PM in 636 SEO