

On Existentially Complete Triangle-free Graphs

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In this talk we discuss a notion of pseudo-randomness for triangle free graphs that originated in model theory: say a graph has the k -extension property if for any two disjoint sets $A, B \subseteq V(G)$ with $|A| + |B| \leq k$, there exists a vertex z that joins to all vertices in A and no vertex in B . While it is easy to show that the binomial random graph $G_{n,1/2}$ satisfies this property with high probability for $k \sim c \log n$, little is known about the “triangle-free” version of this problem; does there exist a finite triangle-free graph G with a similar “extension property”. This question was first raised by Cherlin in 1993 and remains open even in the case $k = 4$.

In this talk I will talk about a new result on this question of Cherlin, proved jointly with Shoham Letzter,.