Ramsey theory in combinatorial convexity

Gyula Karolyi

Eötvös University , Budapest, Hungary
karolyi@cs.elte.hu

Two planar point configurations belong to the same order type if there is a bijection between them that preserves the orientation of the triples. According to the Erdős–Szekeres theorem, every sufficiently large planar configuration contains the vertex set of a convex n-gon. This result, which also has a homogeneous version, can be interpreted as the analogue of Ramsey's theorem for order types. The problem is still far from being properly understood. After a brief survey I will focus on a particular problem where the analogy with graph Ramsey theory breaks: What happens with the exponential bound when the attention is restricted to order types that do not contain a fixed order type?