Publicacions més rellevants de la línia de recerca:
Problemes Extremals en Combinatòria Additiva

Referència: Serra, O. An isoperimetric method for the small sumset problem. in: *Surveys in combinatorics 2005,* pp. 119–152. London Math. Soc. Lecture Note Ser., 327, Cambridge Univ. Press, Cambridge, 2005.

Abstract: The purpose of the paper is to survey applications of an isoperimetric method to the small sumset problem in additive theory. The small sumset problem asks for lower bounds of the cardinality of the sum of two sets in a group. Sample proofs are presented to illustrate the application of the method, which is based on connectivity properties of graphs. In the final part we describe some applications to several problems in number theory, group theory, and combinatorics.

Referència: Hamidoune, Y.O., Serra, O. and Zémor, G. On the critical pair theory in abelian groups: Beyond Chowla's Theorem. *Combinatorica*, **28(4)** (2008), pp. 441–467.

Abstract: We obtain critical pair theorems for subsets S and T of an abelian group such that $|S+T| \leq |S|+|T|$. We generalize some results of Chowla, Vosper, Kemperman and a more recent result due to Rødseth and one of the authors.

Referència: Hamidoune, Y. O.; Lladó, A. S.; Serra, O. On complete subsets of the cyclic group. *J. Combin. Theory Ser. A*, **115(7)** (2008), pp. 1279–1285.

Abstract: A subset X of an abelian G is said to be complete if every element of G can be expressed as a nonempty sum of distinct elements from X.

Let $A \subset \mathbb{Z}_n$ be such that all the elements of A are coprime with n. Solving a conjecture of Erdös and Heilbronn, Olson proved that A is complete if n is a prime and if $|A| > \sqrt{n}$. Recently Vu proved that there is an absolute constant c, such that for an arbitrary large n, A is complete if $|A| \geq c\sqrt{n}$, and conjectured that 2 is essentially the right value of c.

We show that A is complete if $|A| \geq 1 + 2\sqrt{n}$, thus proving the last conjecture..