Krasner near-factorizations and 1-overlapped factorizations

Hidehiro Shinohara

A pair (A, B) of subsets of an abelian group G is called a *near-factorization* (resp. a *1-overlapped factorization*) if $|A + B| = |G| - 1$ and $|A|, |B| \geq 2$ (resp. $|A + B| = |G| + 1$ and $|A|, |B| \geq 2$). Near and/or 1-overlapped factorizations on cyclic groups play important roles both in perfect graph theory and ideal clutter theory. Such a factorization is *Krasner* if its construction does not need any modulo operation (i.e. every addition can be thought as the addition of integers). In this talk, we characterize Krasner near-factorizations and 1-overlapped factorizations, which solves a problem posed by S. Szabó and A.D. Sands. This result contains an extension of a result on factorization of $x^n - 1$ by Krasner and Ranulac in 1937. This is work with Tadashi Sakuma.