

# SUPREMUM OF REPRESENTATION FUNCTIONS: A CONSTRUCTION

JUKKA PIHKO

ABSTRACT. This is joint work with Georges Grekos (St.-Etienne, France), Labib Haddad (Paris, France), and Charles Helou (Media, Pennsylvania).

For a subset  $A$  of  $\mathbb{N} = \{0, 1, 2, \dots\}$ , the representation function of  $A$  is defined by  $r_A(n) = |\{(a, b) \in A \times A \mid a + b = n\}|$ , for  $n \in \mathbb{N}$ , where  $|E|$  denotes the cardinality of a set  $E$ . Its supremum is the element  $s(A) = \sup\{r_A(n) \mid n \in \mathbb{N}\}$  of  $\mathbb{N} \cup \{\infty\}$ . I will present a construction of a family of pairs of disjoint subsets  $A, B$  of  $\mathbb{N}$  such that  $s(A) = s(B) = 2$  and  $s(A \cup B) = \infty$ . This construction appears in our paper in *Integers* 11 (2011), A30, 14 pp.