

## Online Number Theory Seminar

04 March 2022. – 17:00-17:50

### Rob Tijdeman: Diophantine equations and Prouhet-Tarry-Escott sets

By a theorem of Bilu and Tichy (2000) deep insight has been obtained into the structure of the rational solutions of the equation  $f(x) = g(y)$  for polynomials  $f, g$  with rational coefficients. Lajos Hajdu and I have worked out the consequences in case  $f$  has only simple rational roots, a case which occurs often in the literature. It turns out that Prouhet-Tarry-Escott pairs play an important role, in particular if both  $f$  and  $g$  have only simple rational roots. An ideal PTE-pair form two sets of  $n$  integers such that the monic polynomials with their elements as roots differ only by their constant term. We extended the notion to PTE-triples, -quadruples and -sextuples and studied the relation between PTE-sets and equations  $f(x) = g(y)$ .