Online Number Theory Seminar

27 March 2026. – 17:00-17:50

L. Hajdu: The PTE problem, decomposability of polynomials and Diophantine equations.

The Prouhet-Tarry-Escott (shortly PTE) problem asks to describe disjoint sets of integers $\{a_1, \dots, a_n\}$ and $\{b_1, \dots, b_n\}$ such that $a_1^i + \cdots + a_n^i = b_1^i + \cdots + b_n^i$ $(1 \leq i \leq k)$ for some k with $k < n$. The problem has a vast literature, but unfortunately there is little known. In the talk we describe a link between the PTE problem and decomposability of polynomials. Then we give applications for polynomial Diophantine equations, where at least one of the polynomials involved has only rational roots. The new results presented are joint with Á. Papp and R. Tijdeman.