

NUMBER THEORY SEMINAR

A new algorithm for the Prouhet-Tarry-Escott problem

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ABSTRACT:

Given natural numbers n and k , the Prouhet-Tarry-Escott (PTE) asks for integers x_1, \dots, x_n and y_1, \dots, y_n such that the sums of the first k powers are equal. This problem has connections to combinatorics and theoretical computer science, as well as to other areas of number theory, such as Waring's problem.

The most interesting case is when $k = n - 1$, which is called ideal. A major open problem is determining whether ideal PTE solutions exist for a given n , as well as characterizing those that do exist. Computational techniques have been used to search for PTE solutions. In this talk, we present a new algorithm to find PTE solutions, and explain how the results yield more information than other computational searches in the literature.

Any questions, please e-mail: rnoble@mathstat.dal.ca.