Seminar on Combinatorial Computing
October 23, 2002, Wednesday, 6:30 p.m.
Room 6417, Graduate Center
365 Fifth Avenue, New York

Equal sums of cubes

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Abstract

The number 1729 is famous among mathematicians because of the fact that $1729 = 10^3 + 9^3 = 12^3 + 1^3$, and this is the smallest number with two such representations. The study of such numbers goes back about 350 years, when Pierre de Fermat proved that there are infinitely many such numbers. An important question in this area is how dense these numbers are, and I have approached the problem both empirically and theoretically. In particular, I have computed all of these numbers below 10^{18}, and it seems very likely that the number that are $\leq n$ is $\Theta(n^{2/5})$. The method of doing the computation involves an interesting use of a heap. I will discuss both these numerical results and some of the mathematical approaches I have taken, and in particular how the two have supported each other.

For further information contact Janos Pach at pachcims.nyu.edu, or visit our website: http://cs.gc.cuny.edu/∼pach/