

COMBINATORICS, NUMBER THEORY, AND SYMBOLIC ANALYSIS

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Partition numbers $p(n)$ give the number of additive decompositions of nonnegative integers. For example, $4 = 3 + 1 = 2 + 2 = 2 + 1 + 1 = 1 + 1 + 1 + 1$, so $p(4) = 5$. Ramanujan observed that all numbers $p(5n + 4)$, $n \geq 0$, are divisible by 5. Recently, in the context of modular forms, Silviu Radu (RISC) has set up an algorithmic machinery to prove such congruences automatically. The talk is about new developments in this area and discusses various connections between combinatorics, number theory, and symbolic analysis.