

Partitions With Designated Summands Not Divisible by 2^ℓ , 2, and 3^ℓ Modulo 2, 4, and 3

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Numerous congruences for partitions with designated summands have been proven since first being introduced and studied by Andrews, Lewis, and Lovejoy. This talk explicitly characterizes the number of partitions with designated summands whose parts are not divisible by 2^ℓ , 2, and 3^ℓ working modulo 2, 4, and 3, respectively, greatly extending previous results on the subject. We provide a few applications of our characterizations throughout in the form of congruences and a computationally fast recurrence. Moreover, we illustrate a previously undocumented connection between the number of partitions with designated summands and the number of partitions with odd multiplicities.

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