

Seminar 2023

Math

Hook length bias in odd versus distinct partitions

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Abstract: Motivated by hook-content formulas that connect integer partitions to representation theory, we consider the total number of hooks of a fixed length in partitions with odd parts and in partitions with distinct parts. In this talk, we focus on the number of hooks of length 2, respectively 3, and show that the partitions of n into odd parts contain more such hooks than the partitions of n into distinct parts. We additionally provide data to support an analogous conjecture for hooks of any fixed length $t \geq 2$. We will discuss some of the combinatorial and analytic components of the proofs, including a new family of general linear inequalities for the number of partitions into distinct parts. This talk is based on joint work with Cristina Ballantine, William Craig, Amanda Folsom, and Boya Wen.



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