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*Maximum entropy and integer partitions*

We derive asymptotic formulas for the number of integer partitions with given sums of  $j$ th powers of the parts for  $j$  belonging to a finite, non-empty set  $J \subset \mathbb{N}$ . The method we use is based on the “principle of maximum entropy” of Jaynes. This principle leads to an intuitive variational formula for the asymptotics of the logarithm of the number of constrained partitions as the solution to a convex optimization problem over real-valued functions. Based on joint work with Gweneth McKinley and Will Perkins.