Abstract

A *t-partite* number is a t-tuple $\vec{n} = (n_1, \ldots, n_t)$, where $n_1, \ldots, n_t$ are positive integers. For a t-partite number $\vec{n}$, let $f_t(\vec{n})$ be the number of different ways to write $\vec{n}$ as a product of t-partite numbers, where the multiplication is performed coordinate-wise, $(1, 1, \ldots, 1)$ is not used as a factor of $\vec{n}$, and two factorizations are considered the same if they differ only in the order of the factors. This paper gives an upper bound for the multiplicative partition function $f_t(\vec{n})$: $f_t(n_1, \ldots, n_t) \leq M^{w(t)}$, where $M = \Pi_{i=1}^{t} n_i$ and $w(t) = \log(t+1)!/t \log 2$.