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Compositions with pairwise relatively prime summands within a restricted setting,

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Abstract

The paper studies the counting function

$$R_2(n,k) = \sum_{\substack{a_1+a_2+\dots+a_k=n\\(a_i,a_j)=1\\i\neq j}} 1, a_i \ge 1, k \ge 2$$

with a_i, n and k positive integers and establishes a relationship between $R_2(n,k)$ and $P_2(n,k)$ where

$$P_2(n,k) = \sum_{\substack{a_1+a_2+\dots+a_k=n\\1 \le a_1 \le a_2 \le \dots \le a_k \le n\\(a_i,a_j)=1\\i \ne j}} 1, a_i \ge 1, k \ge 2$$

with a_i, n, k positive integers.