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ROGERS–RAMANUJAN TYPE IDENTITIES FOR $(n+t)$–COLOR OVERPARTITIONS

V. Gupta and M. Rana

School of Mathematics,
Thapar Institute of Engineering and Technology,
Patiala, Punjab - 147004, INDIA

E-mail : vasudhasingla.singla2@gmail.com, mrana@thapar.edu

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Abstract: In this paper, we provide combinatorial interpretations of some Rogers–Ramanujan type identities listed in Chu-Zhang and Slater's Compendium using n–color overpartitions.

Keywords and Phrases: Rogers–Ramanujan type identities, n–color overpartitions and combinatorial interpretations.

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1. Introduction

The history of partitions goes by fits and starts. Euler's deep analysis on partitions stood for over a century before other mathematicians made considerable progress. According to Euler's insight, the different kinds of two sets of partitions is seen to have the same count of elements. The most eminent of these outcomes are called the Rogers–Ramanujan identities (RRI). These identities were first discovered by Rogers in 1894 but were appreciated only after Ramanujan rediscovered these in 1913.

$$\sum_{\alpha=0}^{\infty} \frac{q^{\alpha^2}}{(q;q)_\alpha} = \frac{(q^2,q^3;q^5)_\infty}{(q;q)_\infty},$$
$$\sum_{\alpha=0}^{\infty} \frac{q^{\alpha(\alpha+1)}}{(q;q)_\alpha} = \frac{(q,q^4;q^5)_\infty}{(q;q)_\infty},$$