

*J. of Ramanujan Society of Mathematics and Mathematical Sciences*  
*Vol. 11, No. 2 (2024), pp. 137-142*

DOI: 10.56827/JRSMMS.2024.1102.10

ISSN (Online): 2582-5461

ISSN (Print): 2319-1023

**A NOTE ON A NEW AND GENERAL SUMMATION FORMULA  
FOR THE GENERALIZED HYPERGEOMETRIC SERIES  ${}_4F_3(1)$**

**Madhav Prasad Poudel, Vijay Yadav\* and Arjun K. Rathie\*\***

School of Engineering,  
Pokhara University, Kaski, Pokhara, NEPAL

E-mail : pdmadav@gmail.com

\*Department of Mathematics  
SPDT College, Andheri East,  
Mumbai 400059, Maharashtra, INDIA

E-mail : vijaychottu@yahoo.com

\*\*Department of Mathematics  
Vedant College of Engineering & Technology  
(Rajasthan Technical University)  
Tulsi, Jakhmund, Bundi, Rajasthan, INDIA

E-mail : arjunkumarrathie@gmail.com

**(Received: Mar. 17, 2024 Accepted: Jun. 25, 2024 Published: Jun. 30, 2024)**

**Abstract:** The main purpose of this note is to demonstrate how one can obtain a new and general summation formula for the generalized hypergeometric series  ${}_4F_3(1)$ . This is achieved by employing two generalizations of the Gauss's second summation theorems obtained earlier by Rakha and Rathie in an identity due to Bailey. Several results obtained earlier by Ali et al. follow special cases of our main findings.

**Keywords and Phrases:** Generalized hypergeometric function, Gauss summation formula, Generalization, Bailey identity.

**2020 Mathematics Subject Classification:** 33C20.