

**BASIC BILATERAL HYPERGEOMETRIC FUNCTION  ${}_2\Psi_2$  AND  
CONTINUED FRACTIONS**

**G. S. Pant, K. B. Chand and Manoj Kumar Pathak\***

Department of Mathematics,  
Siddhanath Science Campus,  
Mahendranagar, Kanchanpur, NEPAL

E-mail : gspant2008@gmail.com

\*Department of Mathematics,  
R. S. K. D. P. G. College,  
Jaunpur - 222002, Uttar Pradesh, INDIA

E-mail : meetmanoj266@gmail.com

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**Abstract:** In this paper certain continued fractions of the ratios of  ${}_2\Psi_2$ -series have been established.

**Keywords and Phrases:** Basic bilateral hypergeometric series, basic hypergeometric series, continued fraction and transformation formula.

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### **1. Introduction, Notations and Definitions**

Since the time of Euler and Gauss, continued fractions have been playing a very important role in number theory and classical analysis. Generalized hypergeometric series, both ordinary and basic have been a very significant tool in the derivation of continued fraction representations. A fresh impetus to this interesting branch of analysis has been given by the works of Ramanujan which are reputed with some beautiful continued fraction representations without any reference to their number theoretic importance or interpretations. Various continued fraction representations for the ratio of  ${}_2\Psi_2$ 's are known in the literature. Bhagirathi [3], Denis [5], Gupta [7,