REDUCTION FORMULA ASSOCIATED WITH WHITTAKER FUNCTION

N.U. Khan and T. Kashmin

Department of Applied Mathematics
Faculty of Engineering and Technology
Aligarh Muslim University, Aligarh-202002, India.
E-mail: nukhanmath@gmail.com ; kashminalig7384@gmail.com

Dedicated to Prof. M.A. Pathan on his 75th birth anniversary

Abstract: Significant result is obtained in the present study in terms of reduction formulas of Srivastava's function $F^{(3)}$ into a combination of Exton's double hypergeometric function $X_{E:G;H}^{A:B;D}$. We then make use of our main result to derive a number of known and new transformation and reduction formulas for some Srivastava's triple hypergeometric series, Exton double hypergeometric function, Appell function etcetera.

Keywords: Whittaker function, Preece result, Appell's, Exton and Srivastava's triple hypergeometric series and Pochhammer symbol.

2010 Mathematics Subject Classification: 33C20, 33C65, 33C70, 33C80, 33C90.

1. Introduction

Saran [16], Sivastava [11], Exton [9], Srivastava and Karlsson [14] have discussed many transformations and interesting instances of the reducibility of triple hypergeometric functions. These results are obtained mainly by manipulations of the series. The study of transformation and reduction formulae have occupied the attention of many authors. The searching technique of the manipulations of the series has classically found wide application in this field. It is now employed together with Preece result in the present paper to obtain the main reduction formula of Srivastava's function $F^{(3)}$ into a combination of Exton's double hypergeometric function $X_{0:3;1}^{1:2;1}$. Some deduction from this formula lead us to a number of known and new transformation and reduction formulas for some Exton's double hypergeometric function and Appell function F_2.