

**NUMERICAL SOLUTION OF N^{TH} -ORDER FUZZY INITIAL VALUE
PROBLEMS BY NON-LINEAR TRAPEZOIDAL METHOD BASED ON
LOGARITHMIC MEAN WITH STEP SIZE CONTROL**

R. GETHSI SHARMILA & E. C. HENRY AMIRTHARAJ

Department of Mathematics, Bishop Heber College (Autonomous), Tiruchirappalli, Tamil Nadu, India

ABSTRACT

In this paper, a numerical method for N^{th} - order Fuzzy Initial Value Problems (FIVP) based on Seikkala derivative of fuzzy process is studied. The non-linear trapezoidal method based on logarithmic mean is used to find the numerical solution of the FIVP and the convergence and stability of the method is given. This method is illustrated by solving second and third order FIVPs.

KEYWORDS: Triangular Fuzzy Number, N^{th} - Order Fuzzy Initial Value Problem, Non-Linear Trapezoidal Method, Logarithmic Mean, Step Size Control