

**IMPLEMENTATION OF ADVANCED NUMERICAL METHODS
FOR SOLVING NONLINEAR FISHER EQUATION**

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Abstract: This paper presents higher order numerical methods for solving nonlinear Fisher equations. These types of equation arise in various fields of sciences and engineering, the main application of this equation has been found in biomedical sciences. The solution of this equation helps determine the size of the brain tumor. In this paper, we have constructed the numerical method based on the method of lines and higher order strong stability preserving schemes of order four and eight. These schemes are explicit in nature and easy to implement specially to solve the nonlinear problems. Due to the stability preserving nature of the scheme, the restriction on time step is very mild. These schemes are very practical to use and produce very accurate results. Various test problems are considered to validate the scheme along with a comparison of l_2 and l_∞ errors with the exact solution, resulting in high accuracy. The scheme is found to be better compared to existing schemes with less computational effort.

Keywords and Phrases: Fisher's problems, Method of lines, Finite difference methods, Strong stability preserving Runge-Kutta methods.

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