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A THREE-LEVEL LINEARIZED DIFFERENCE SCHEME FOR THE TWO-DIMENSIONAL EXTENDED-FISHER-KOLMOGOROV EQUATION

KAOUTHER ISMAIL

Abstract. The extended-Fisher-Kolmogorov (EFK) equation is a strong nonlinear fourth order reaction diffusion evolution system. So far, the numerical methods for solving this problem are only a few. In this work, a three-level linearized finite difference scheme is derived. The scheme is proved to be uniquely solvable, and unconditionally second-order convergent in both time and space in the maximum norm. Several numerical examples are presented to demonstrate the accuracy and efficiency of the proposed method.

Ecole Polytechnique de Tunis, Rue El Khawarezmi, 2078 La Marsa, Tunisia,
E-mail address: ismail.k.2009@gmail.com