Soliton Analysis of some PDEs by Different Algebraic Methods.

Uzma Bashir
(Collegio Raffaello, Piazza della Repubblica, 13 61029 Urbino (Pesaro e Urbino))
E-mail: u.bashir@campus.uniurb.it

Mathematical descriptions of nonlinear phenomena and ever-changing dynamics can be realized through mathematical modeling, which incorporates different differential equations. Because of these points, this study has examined the soliton propagation of the Fokas, Gilson Pickering and BLMP equation. The new soliton solutions are extracted, such as solitary, dark, bright, singular, periodic, and plane wave solutions, that have not been found in the literature before with the application of the extended simple equation method (ESEM) and modified F-expansion method (MFEM). The uniqueness and differentiation of our solutions lie in the specific constraint conditions and parameter ranges considered in our study. The investigation shows that the approach used to acquire complete and distinctive solutions rapidly is successful. Based on the proposed schemes offered herein, these results can be measured as directions for potential future research through systematized and appropriate engineering and applied science methods. In future, i am planning to write a book on these results so that this research will be helpful in true sense.