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Soliton solutions of a $BBM(m,n)$ equation with generalized evolution

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ABSTRACT

We consider a $BBM(m,n)$ equation which is a generalization of the celebrated Benjamin–Bona–Mahony equation with generalized evolution term. By using two solitary wave ansatze in terms of $\mathrm{sech}^p(x)$ and $\tanh^p(x)$ functions, we find exact analytical bright and dark soliton solutions for the considered model. The physical parameters in the soliton solutions are obtained as function of the dependent model coefficients. The conditions of existence of solitons are presented. Note that, it is always useful and desirable to construct exact analytical solutions especially soliton-type envelope for the understanding of most nonlinear physical phenomena.