

New numerical results on some Boussinesq-type wave equations

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Boussinesq-type equations were proposed to model bi-directional propagation of nonlinear dispersive waves arising in many areas of science and engineering. Elastic waves and surface water waves are the two most studied phenomena in the literature within the context of a Boussinesq-type equation model. In this talk, we will focus on a Fourier pseudo-spectral method for solving one-dimensional Boussinesq-type equations. Then we will present our preliminary numerical results concerning the two standard test problems: the propagation of a single solitary wave and the collision of two solitary waves. We also compare our numerical results with those given in the literature in terms of both numerical accuracy and computational cost. The numerical comparisons show that the Fourier pseudo-spectral method provides very accurate results, at least for the two test problems stated above, and has a promising potential for handling other problems based on Boussinesq-type equations.