A novel modified simple equation method and its application to some nonlinear evolution equation systems

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Abstract: In this paper, the modified simple equation (MSE) method [1,2] is used to construct exact solutions of the nonlinear Drinfeld–Sokolov system, Maccari system and Coupled Higgs equation The exact solutions obtained by the proposed method indicate that the approach is easy to implement and computationally very attractive. Also we can see that when the parameters are assigned special values, solitary wave solutions can be obtained from the exact solutions [3-6]. All calculations in this study have been made with the aid of the Maple packet program.

References:

[1] E.M.E. Zayed, A note on the modified simple equation method applied to Sharma-Tasso-Olver equation, Appl. Math. Comput., vol. 218 pp. 3962–3964, 2011.

[2] E.M.E. Zayed, S.A.H. Ibrahim, Exact solutions of nonlinear evolution equations in mathematical physics using the modified simple equation method, Chinese Phys. Lett., vol. 29, no. 6, doi: 10.1088/0256-307X/29/6/060201, 2012.

[3] A.M. Wazwaz, Exact and explicit travelling wave solutions for the nonlinear Drinfeld-Sokolov system, Commun Non Sci Numer Simul., vol. 11, pp. 311–325, 2006.

[4] A. Maccari, The Kadomtsev-Petviashvili equation as a source of integrable model equations, J. Math.Phys., vol. 37, pp. 6207–6212, 1996.

[5] M. Tajiri, On N-soliton solutions of coupled Higgs field equations, J. Phys. Soc. Jpn., vol. 9, no. 52, pp. 2277–2280, 1983.

[6] A. Jabbari, H. Kheiri, A. Bekir, Exact solutions of the coupled Higgs equation and the Maccari system using He's semi-inverse method and (G′/G)-expansion method, Computers and Mathematics with Applications, vol. 62 pp. 2177–2186, 2011.

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