Explicit and Exact Nontravelling Wave Solutions of Konopelchenko-Dubrovsky Equations

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Based on a new first-order nonlinear ordinary differential equation with a sixth-degree nonlinear term and some of its special solutions, a generalized transformation method is proposed to obtain more general exact solutions of the (2+1)-dimensional Konopelchenko-Dubrovsky equations. As a result, new exact nontravelling wave solutions are obtained including soliton-like solutions and trigonometric function solutions, from which all travelling wave solutions obtained by B. C. Li and Y. F. Zhang [Chaos, Solitons and Fractals (2007), doi:10.1016/j.chaos.2007.01.059] can be recovered as special cases. Compared with Li and Zhang's method and the method of D. J. Huang, D. S. Li, and H. Q. Zhang [Commun. Theor. Phys. (Beijing, China) **44**, 969 (2005)], D. J. Huang and H. Q. Zhang [Rep. Math. Phys. **57**, 257 (2006)], D. J. Huang, D. S. Li, and H. Q. Zhang [Chaos, Solitons and Fractals **31**, 586 (2007)], the proposed method is more powerful in searching for exact solutions of nonlinear evolution equations in mathematical physics.

Key words: Nonlinear Evolution Equations; Nontravelling Wave Solutions; Soliton-Like Solutions; Trigonometric Function Solutions.