

Extended Fan's Algebraic Method and Its Application to KdV and Variant Boussinesq Equations

YANG Xian-Lin^{1,2} and TANG Jia-Shi¹

¹ College of Mechanics and Aerospace, Hunan University, Changsha 410082, China

² Department of Computer Science, Hunan Radio and Television University, Changsha 410004, China
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Abstract: An extended Fan's algebraic method is used for constructing exact traveling wave solution of nonlinear partial differential equations. The key idea of this method is to introduce an auxiliary ordinary differential equation which is regarded as an extended elliptic equation and whose degree r is expanded to the case of $r > 4$. The efficiency of the method is demonstrated by the KdV equation and the variant Boussinesq equations. The results indicate that the method not only offers all solutions obtained by using Fu's and Fan's methods, but also some new solutions.

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Key words: algebraic method, KdV equation, variant boussinesq equations, polynomial complete discrimination system

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