

Auto-Bäcklund Transformations and Exact Solutions for the Generalized Two-Dimensional Korteweg-de Vries-Burgers-type Equations and Burgers-type Equations

Biao Li^{a,b}, Yong Chen^{a,b}, and Hongqing Zhang^{a,b}

^a Department of Applied Mathematics, Dalian University of Technology, Dalian 116024, China

^b Key Laboratory of Mathematics Mechanization, Chinese Academy of Sciences,
Beijing 100080, China

Reprint requests to Dr. B. Li; E-mail: libiao@dlut.edu.cn.

Z. Naturforsch. **58a**, 464 – 472 (2003); received June 7, 2002

In this paper, based on the idea of the homogeneous balance method and with the help of *Mathematica*, we obtain a new auto-Bäcklund transformation for the generalized two-dimensional Korteweg-de Vries-Burgers-type equation and a new auto-Bäcklund transformation for the generalized two-dimensional Burgers-type equation by introducing two appropriate transformations. Then, based on these two auto-Bäcklund transformation, some exact solutions for these equations are derived. Some figures are given to show the properties of the solutions.

Key words: Auto-Bäcklund transformation; Homogeneous balance method; Two-dimensional Korteweg-de Vries-Burgers-type equation; Two-dimensional Burgers-type equation; Solitary-wave solution; *Mathematica*.