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10. Partial Differential Equations

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Cherniha, Roman M.,
Institute of Mathematics, Ukrainian Academy of Sciences, Tereshchenkivs'ka Str. 3, Kyiv 4, Ukraine

Nonlinear reaction-diffusion-convection equations of the form

$$U_t = [A(U)U_x]_x + B(U)U_x + C(U), \qquad U = U(t,x), \tag{1}$$

are considered. A *complete* describing Lie symmetries of equation (**??**) is presented [1]. A new constructive method [1] for obtaining new non-Lie ansätze and exact solutions of nonlinear PDEs with trivial Lie symmetries is suggested. The method is based on the consideration of a fixed nonlinear PDE together with an *additional generating condition* in the form of a linear high-order ODE. New exact solutions are obtained for equations of the form (1) and for some nonlinear diffusion systems.

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