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Jibin Li* (jibinli@gmail.com), Kunming, Yunnan 650093, Peoples Rep of China, and **Yi Zhang** and **Guanrong Chen**. *Exact Solutions and Their Dynamics of Traveling Waves in Three Typical Nonlinear Wave Equations*. Preliminary report.

It was reported in the literature that some nonlinear wave equations have the so-called loop- and inverted-loop-soliton solutions, as well as the so-called loop-periodic solutions. Are these true mathematical solutions or just numerical artifacts? To answer the question, this article investigates all traveling wave solutions in the parameter space for three typical nonlinear wave equations from a theoretical viewpoint of dynamical systems. Dynamical analysis shows that all these loop- and inverted-loop-solutions are merely visual illusion of numerical artifacts. To reveal the nature of such special phenomena, this article also offers the mathematical parametric representations of these traveling wave solutions precisely in analytic forms. (Received August 28, 2008)