

A new class of exact solutions for three-dimensional quasilinear systems of first order.

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Well-known Lin-Reissner-Tsien equation in aerodynamics (1948) will be considered. This equation also is known as the Khokhlov--Zabolotskaya equation in nonlinear acoustics, and is known as a dispersionless limit of the Kadomtsev--Petviashvili equation in hydrodynamics.

New ansatz for construction of infinitely many two-dimensional reductions is found for this three-dimensional equation. They are generalisations of two-dimensional hydrodynamic reductions.

In one-component case, a corresponding particular solution is found with five arbitrary functions of a single variable.

Also some other three-dimensional integrable quasilinear systems of first order will be considered.