The Connection Between the Manifold Geometry and the DaveyStewartson Equation

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ABSTRACT

The study of the links between the differential surface geometry and nonlinear integrable equations is one of the topics of interest to mathematicians and physicists. The root of these studies goes back to the nineteenth century, to the works of the great geometers Li, Darboux, Bianchi, Backlund, etc. A new section of geometry, called soliton geometry, associated with integrable equations, gave a powerful impetus to the study of the above links. Soliton geometry in the space of $(1 + 1)$-dimensions reached a mature state, while in the space of $(2 + 1)$-dimensions these studies are still being discussed. In my contribution, we talk about the results of the investigation of the connection between the variety and the $(2 + 1)$-dimensional DaveyStewartson equation.