Invariant Nonlinear Partial Differential Equations in Klein geometry

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Abstract

In this talk, we mainly discuss invariant geometric motions of plane or space curves in Klein geometry. It is shown that many important integrable equations naturally arise from the motions of curves in Klein geometries. These local and nonlocal dynamics conserve global geometric quantities of curves such as perimeter and enclosed area. Motions of curves in the geometries corresponding to the traveling wave solutions of the mKdV and KdV equations are discussed. Large time asymptotic behavior for the evolution of invariant geometrical equation in certain geometry is also discussed.