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The system of n-order Riccati equations: derivation, solutions, applications.

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An algorithm of reduction of n-order differential equation into the system of n-order Riccati-type equations is constructed. Solutions of the system of Riccati equations are roots of the polynomial coefficients of which are given by the set of linear independent solutions of n-order differential equation. Interrelations with the Poincare model of hyperbolic space and the general complex algebra are established. The physical interpretation of the obtained system of Riccati equations is given via dynamics of the generalized classical mechanics.

Short biography note

R.M.Yamaleev, representation of n-order Riccati equation via generalized trigonometric functions. J.Math.Anal.Appl. 420(1) 12 (2014) 334-347.

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