About one singularity of the property of disturbed differential systems equivalence to linear differential equations

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Abstract

In this paper we consider the families of morphisms of vector fibre bundles [1] defined by the linear systems of differential equations. We proving that the specified families of morphisms is not saturated (2).

1 Short report

Consider the vector fibre space \((E, p, B)\) with \(\mathbb{R}^n\) as a fibre and \(B\) as a base (where \(B\) is full metric space). On \((E, p, B)\) fixing some Riemannian metric [3], P. 58-59.

Investigate the families of morphisms \(G\) linear enlargement of dynamic system [4], :

\[
(X(m), \chi(m)) : (E, p, B) \to (E, p, B),
\]

\((m \in \mathbb{N})\), of the vector fibre space \((E, p, B)\), where

\[
B = M_n, \quad E = B \times R^n, \quad p = pr_1, \quad (1)
\]

\[
X^t(A, x) = (\chi^t A, \mathfrak{X}(t, 0, A) \cdot x),
\]

\[
\chi^t A(\cdot) = A(t + (\cdot)),
\]

here \(M_n\) - the space of systems of differential equations equivalence to \(n\)-order linear differential equation (5), \(A \in B, \quad x \in \mathbb{R}^n, \quad \mathfrak{X}(\Theta, \tau, A)\) - Cauchy matrix of the system \(\dot{x} = A(t) \cdot x\).

Theorem 1.1. The families of morphisms \(G\) of the vector fibre space is not saturated.

References

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