

Helmke, Uwe; Shayman, Mark A.

Topology of the orbit space of generalized linear systems. (English) Zbl 0741.93025
Math. Control Signals Syst. 4, No. 4, 411-437 (1991).

Generalized linear systems $E\dot{x} = Ax + Bu$ which are admissible are studied under the “restricted systems equivalence” transformation induced by $(E, A, B) \rightarrow (MEN^{-1}, MAN^{-1}, MB)$ and the “scaling action” $(E, A, B) \rightarrow (aE + bA, cE + dA, B)$, $ad - bc \neq 0$. The class of systems which are studied also assume “controllability” i.e. $[\lambda E - \mu A, B]$ of full rank for each $(\lambda, \mu) \neq (0, 0)$. It is proved that the quotient space of the space of controllable systems under restricted systems equivalence is a smooth compact projective algebraic manifold and the homology groups are calculated.

Reviewer: [L.Pandolfi \(Torino\)](#)

MSC:

93C05 Linear systems in control theory

93C15 Control/observation systems governed by ordinary differential equations

Cited in **9** Documents

Keywords:

[restricted systems equivalence](#); [scaling action](#)