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17. Control Theory and Optimization

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Canonical forms in control time-delay systems theory

Several classes of non-singular functional transformations for linear stationary dynamical systems with retarded argument are introduced. Then, the problem of determination of canonical forms is interpreted as the algebraic problem of universality for each class of transformations. Generalization of Kalman, Popov and Brunovsky canonical representations are given for systems of control and observation with after-effect. By using the results obtained, the main qualitative control theory problems such as controllability, observability, modal control, reconstruction and others are successfully investigated for various types of functional-differential systems under action of several kinds of linear state feedback.