KYBERNETIKA — VOLUME *29* (1993), NUMBER 5, PAGES 485-498

Structure At Infinity, Model Matching and Disturbance Rejection for Linear Systems with Delays

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Abstract: Structure at infinity for systems with delays is introduced here. A generalization of the Smith-McMillan form at infinity is given with an application to the Model Matching and Disturbance Rejection Problems. With the help of some finite dimensional descriptions, a formulation of a Partial Disturbance Rejection Problem is given for systems with delay and necessary and sufficient structural conditions are provided for the existence of a non anticipative state feedback solution to this problem. These conditions are expressed in terms of structures at infinity and directly extend the corresponding result about Exact Disturbance Rejection for classical systems without delay.

Keywords:

AMS Subject Classification: