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CONTROLLABILITY OF LINEAR SYSTEMS OF VARIABLE STRUCTURE USING A DYNAMIC CONTROLLER

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The problem of controllability of linear systems of variable structure using a dynamic controller is considered. The notion of complete controllability of such systems using a dynamic controller is formulated. Conditions for the complete controllability of composite and stage-by-stage changing linear nonstationary systems using a dynamic controller are obtained. It is shown that a stage-by-stage changing linear stationary system is completely controllable using a dynamic controller if and only if the system is completely controllable and completely observable. The criterion of complete controllability is explicitly expressed in terms of the controllability and observability matrices of a stage-by-stage changing linear stationary system and is comparable with the known condition for a conventional system.

Keywords: system of variable structure, composite system, stage-by-stage changing system, controllability, observability, dynamic controller.

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