

Time-Domain and Parametric L^2 -Properties Corresponding to Popov Inequality.

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Abstract: For Popov's frequency-domain inequality a general solution is constructed in L^2 , which relies on the strict positive realness of a generating function. This solution allows revealing time-domain properties, equivalent to the fulfilment of Popov's inequality in the frequency-domain. Particular aspects occurring in the dynamics of the linear subsystem involved in Popov's inequality are further explored for step response, as representing a usual characterization in control system analysis. It is also shown that such behavioural particularities are directly related to the BIBO stability of the linear subsystem.

Keywords:

AMS Subject Classification: 93D;