A Survey on Positive Real and Strictly Positive Real Scalar Transfer Functions

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Abstract : Positive real and strictly positive real transfer functions are important concepts in the control theory. In this paper, the results of researches in these areas are summarized. Definitions together with their graphical interpretations are mentioned. The equivalent conditions in the frequency domain and state space representations are reviewed. Their equivalent electrical networks are explained. Also, a comprehensive discussion about a difference between behavior of real part of positive real and strictly positive real transfer functions in high frequencies is presented. Furthermore, several illustrative examples are given.

Keywords : real rational transfer functions, positive realness property, strictly positive realness property, equivalent conditions

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