

ON THE POSITIVITY OF STRANGENESS-FREE DESCRIPTOR SYSTEMS

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ABSTRACT. In this talk we consider the time-variant strangeness-free descriptor systems of the form

$$E(t)\dot{x} = A(t)x + B(t)u, \quad x(0) = x_0$$

where coefficients $E(t), A(t), B(t)$ are real matrix functions of appropriate size. The state x , input u are real-valued vector functions. The system is called "positive" if it has non-negative solution for any appropriate non-negative input and non-negative consistent initial condition. We will review some properties of positive systems in the constant coefficient case. In the next part of the talk we will discuss the time-variant case for strangeness-free descriptor systems via the analysis of differential-algebraic equations.