

On normalized bezout fractions of distributed LTI systems

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ON NORMALIZED BEZOUT FRACTIONS OF DISTRIBUTED LTI SYSTEMS

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Abstract

In recent years, the so called stable bezout fraction theory has been quite popular in system and control synthesis. The central concepts of this theory are *bezout fractions* and *normalized bezout fractions*. Many methods and techniques in stable bezout fraction theory are based on the use of normalized bezout fractions, for example, 1) to design a graph metric; 2) to provide a necessary and sufficient condition for robust stabilization of feedback systems with additive perturbations to a normalized bezout fraction [2]. However, the existence of normalized bezout fractions has not been solved satisfactorily for distributed LTI systems. The present paper investigates this open problem. In this paper, it is shown that, if a transfer function matrix with entries in the Nevanlinna class N , which is a fairly general framework for studying the distributed LTI systems, has a bezout fraction, then it has a *normalized* one.

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