Identification of Linear Dynamic Systems Using the Concept of Parameter Space Separators

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Abstract: The paper ovserves the problem of structural identifiability of models in state-space. We offer an effective approach to the analysis of structural identifiability, including a necessary and sufficient condition for the analysis of both local and global identifiability, as well as procedures for the elimination of unidentifiable. Unlike other methods, this approach requires a significantly smaller amount of symbolic computation, and thus it allows the analysis of models of large dimensions. This paper describes the essence of the proposed approach, given the definition of the weak, the true and the false separators, as well as an algorithm for constructing true separators. It is also considered an example of the existence of three linear separators model structure corresponding to the six decisions of the problem of estimating the unknown parameters, detected their geometric arrangement and properties.

Key words: parametric identification, identifiability of linear dynamic models in the state space, parameter space.

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