

Towards state space identification for multilinear systems by hierarchical  
tensor decomposition

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Well known state space identification methods efficiently find parameters of linear systems from measurement data. If the investigated system is not linear but multilinear, the method is no longer directly applicable and tensor decomposition is a key to parameter identification for this class of systems. Moreover, as the dynamics of discrete time system is recursive, hierarchical decomposition is appropriate for this task. The identification problem will be presented as well as approaches to extend SVD methods for linear systems to multilinear systems based on hierarchical tensor decomposition algorithms.