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Partially observable networks with polytree structure

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Abstract— **The paper deals with the problem of unveiling the link structure of a network of linear dynamical systems. A technique is provided guaranteeing an exact detection of the links of a network of dynamical systems with no undirected cycles (Linear Dynamic Polytrees). In particular, the presence of unobserved (latent) nodes is taken into account. Knowledge on the specific number of hidden processes is not required. It is proven that the topology can be consistently reconstructed, as long the degree of each latent node is at least three with outdegree of at least two. The result extends previous work that was limited to a more restricted class of dynamical systems (Rooted Trees).**

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