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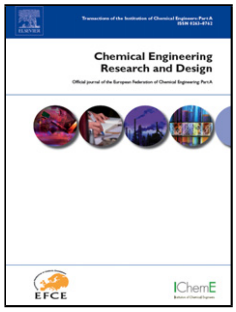

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A SIMPLE MULTI-MODEL PREDICTION METHOD

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Highlights

- This paper introduces the SMLP, a multiple state-space model for nonlinear systems
- It allows for accurate predictions and control, keeping linear model advantages
- The SMLP is built by defining multiple states and updating them simultaneously
- Every sub-model is associated to a state and contributes to SMLP output prediction
- The weight of each sub-model/sub-state shifts smoothly through the input space

Abstract

The present work introduces a new multi-model state-space formulation called simultaneous multi-linear prediction (SMLP), which is suitable for systems with significant gain variation due to nonlinearity.

Standard multi-model formulations usually make use of a partitioned state-space, i.e., a state-space that is divided into regions to shift parameters of the state update equation according to the current location of the state, with a view to having a better approximation of a nonlinear plant on each region. This multi-model framework, also known as linear

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