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Real time parameter identification and solution reconstruction from experimental data using the Proper Generalized Decomposition

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Abstract

Some industrial processes are modelled by parametric partial differential equations. Integrating computational modelling and data assimilation into the control process requires obtaining a solution of the numerical model at the characteristic frequency of the process (real-time). This paper introduces a computational strategy allowing to efficiently exploit measurements of those industrial processes, providing the solution of the model at the required frequency. This is particularly interesting in the framework of control algorithms that rely on a model involving a set of parameters. For instance, the curing process of a composite material is modelled as a thermo-mechanical problem whose corresponding parameters describe the thermal and mechanical

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