

Informativity for data-driven model reduction through interpolation [★]

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Abstract: A method for data-driven interpolatory model reduction is presented in this extended abstract. This framework enables the computation of the transfer function values at given interpolation points based on time-domain input-output data only, without explicitly identifying the high-order system. Instead, by characterizing the set of all systems explaining the data, necessary and sufficient conditions are given under which all systems in this set share the same transfer function value at a given interpolation point. After following this so-called data informativity perspective, reduced-order models can be obtained by classical interpolation techniques. An example of an electrical circuit illustrates this framework.

Keywords: Data-driven model reduction, identification and model reduction, data informativity, interpolatory model reduction.

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