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How (Not) to Compare Model Order Reduction Algorithms

Publications on model reduction research typically culminate in the numerical results section, which (supposedly) illustrates or justifies the previous theoretical findings. These numerical experiments generally show results supporting the proposed model reduction algorithm or modification thereof. However, an experimental design or an experiment itself involving model reduction is easily flawed. In this contribution, we will discuss common design pitfalls of computer-based model reduction experiments, recurring misrepresentation or misinterpretation of experimental results, good practices for scientific numerical evaluation of model order reduction algorithms, and review guidelines for model reduction numerics.

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