emgr – **EM**pirical **GR**amian Framework (Version: 5.2)

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emgr – the empirical Gramian framework is a model reduction software toolbox for the computation of system Gramian matrices associated to (parametrized) nonlinear input-output systems. Gramian-based model reduction is based on the system's input-output coherence in terms of controllability and observability. Besides parametric model order reduction and nonlinear model order reduction also combined state and parameter reduction is feasible with empirical Gramians.

Empirical Gramians:
- Empirical Controllability Gramian
- Empirical Observability Gramian
- Empirical Cross Gramian
- Empirical Linear Cross Gramian
- Empirical Sensitivity Gramian
- Empirical Identifiability Gramian
- Empirical Joint Gramian

Features:
- Interfaces for: Solver, inner product kernels & distributed memory
- Non-Symmetric option for all cross Gramians
- Compatible with OCTAVE and MATLAB
- Vectorized and parallelizable
- Functional Design
- Open-source licensed

More info: http://gramian.de
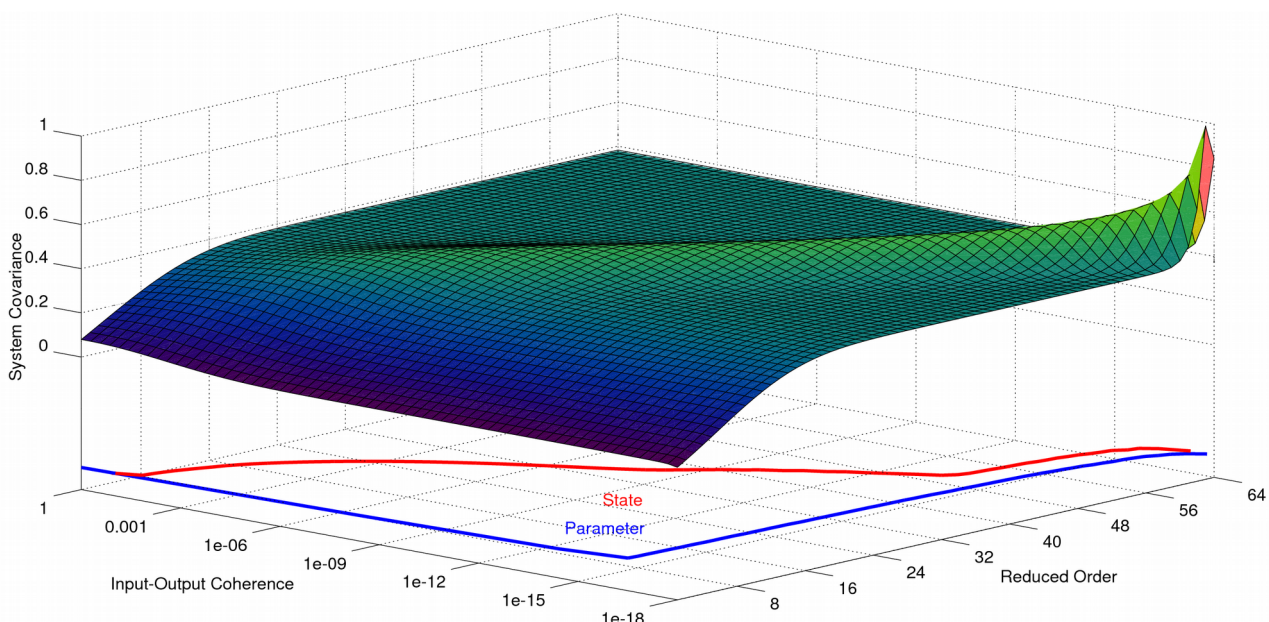
Combined state and parameter reducibility for a nonlinear transport problem with local velocity parametrization.