



CSC Seminar

SPEAKER

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TITLE

Registration-based model reduction of parameterized advection-dominated PDEs

ABSTRACT

We propose a model reduction procedure for rapid and reliable solution of parameterized advection-dominated problems. Accurate approximation of travelling parameter-dependent waves is extremely challenging for traditional model reduction approaches based on linear approximation spaces: to address this issue, we propose an adaptive registration-based data compression procedure to align local features in a fixed reference domain, to ultimately improve the linear compressibility of the solution manifold. We further develop an hyper-reduced projection-based (Petrov-Galerkin) framework for the computation of the mapped solution. Numerical results for a two-dimensional inviscid flow past a bump (Euler equations) and for a one-dimensional shallow water system show the potential of the method.

Work in collaboration with Dr. Lei Zhang (Inria Bordeaux).

Tuesday, April 20, 2021 at 2 pm

BBB