

**Model order reduction of parametric transport-dominated problems in Wasserstein spaces
(joint work with D. Lombardi, O. Mula, F.-X. Vialard)**

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The aim of this talk is to present new model-order reduction techniques for parametric conservative transport-dominated problems based on the use of the 2-Wasserstein metric. For such problems, standard linear approximation techniques are known not to be sufficient to yield satisfactory approximations, because of the slow decay of the Kolmogorov n -width for such problems.

In this work, we propose a new nonlinear approximation method, based on the use of Wasserstein spaces, the motivation stemming from the fact that the Wasserstein metric enjoys very interesting properties with respect to the approximation of transport problems. We develop and compare two different model reduction approaches based on these concepts, one of them using Wasserstein barycenters. Some theoretical results on the efficiency of these approaches for the reduction of solutions of parametrized Burgers equation will be presented. Numerical tests illustrate the interest of the approach to reduce complexity for other types of conservative transport-dominated PDEs.