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Compression of partial differential operators by numerical homogenization

Thursday, 12 May 2022 11:30 (1 hour)

Numerical homogenization is a methodology for the computational solution of multiscale partial differential equations. It aims at the compression of the corresponding partial differential operators to finite-dimensional sparse surrogate models. The surrogates are valid on a given target scale of interest, thereby accounting for the impact of features on under-resolved scales. This talk shows how to construct such surrogates by localized orthogonal decompositions and discusses the underlying mathematics as well as applications to random diffusion and Schrödinger operators.

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