

An introduction to domain decomposition methods for optimal control problems

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Abstract

This introductory lecture focuses on domain decomposition methods for optimal control problems. After reviewing possible transmission conditions and discussing the convergence of the related iterations, we will focus on a nonoverlapping Robin-type iteration. For this case, we present a detailed analysis and study the convergence behavior of the method (as iterative method and as preconditioner) by direct numerical experiments. Finally, we introduce a nonlinear preconditioning strategy based on the studied Robin-type iteration and analyze its numerical behavior through extensive numerical experiments.