Transmission Conditions in Domain Decomposition methods and Optimal Control Problems

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Abstract

PDE-constrained optimization problems play an important role in numerous fields of application, ranging from engineering and physics to finance and data science. Solving these problems often leads to large algebraic systems, and thus one needs to use parallel computing clusters to efficiently handle such systems. One attractive way of speeding up the computation is to use domain decomposition methods (DDMs), which are known to be very well suited for parallel computing. Since their emergence and the seminal work of Pierre-Louis Lions, they have received a considerable amount of attention. Their study, whether it is conducted at the continuous level or the discrete level, remains a challenging issue. This mini-symposium aims at gathering experts on the subject, presenting recent advancements in transmission conditions in DDMs, and focusing on their application for solving efficiently PDE-constrained optimization problems. New methods as well as original approaches to well-known methods are to be presented and analyzed, which will lead to open discussions on future research directions.

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