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Robust Coarse Spaces for Domain Decomposition Methods

Alexander Heinlein[1], Axel Klawonn[2,3], Martin Lanser[2,3], Adam Wasiak[2], and Janine Weber[2]

[1] Delft Institute of Applied Mathematics, TU Delft, Mekelweg 4, 2628 CD Delft, The Netherlands. Email: a.heinlein@tudelft.de

[2] Department of Mathematics and Computer Science, University of Cologne, Weyertal 86-90, 50931 Köln, Germany.
Email: {axel.klawonn,martin.lanser,adam.wasiak,janine.weber}@uni-koeln.de.
URL: https://www.numerik.uni-koeln.de

[3] Center for Data and Simulation Science, University of Cologne.
URL: https://www.cds.uni-koeln.de

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The convergence rate of domain decomposition methods is generally determined by the eigenvalues of the preconditioned system. For second-order elliptic partial differential equations, coefficient discontinuities with a large contrast can lead to a deterioration of the convergence rate. Only by implementing an appropriate coarse space or second level, a robust domain decomposition method can be obtained. In this talk, frugal and adaptive coarse spaces for FETI-DP and BDDC methods are discussed and parallel results are presented. If time allows, nonlinear adaptive domain decomposition methods and virtual element discretizations are also discussed.