

ROBUST PARAMENTER/MESH-FREE PRECONDITIONER FOR A BOUNDARY CONTROL ELLIPTIC PROBLEM

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ABSTRACT. We discuss the following problem: Given a target function $u^* \in L^2(\Omega)$, what is the Neumann data λ^* so that its harmonic extension u_{λ^*} into Ω is the closest function to u^* in the $L^2(\Omega)$ -norm. For convex polygonal domain, we show that regularization is not needed in case the control space for the Neumann data is chosen properly. In the second part of the talk we discuss robust solvers for the discrete Hessian system on $\partial\Omega$.

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