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STABILIZATION OF LOCAL PROJECTION TYPE APPLIED TO CONVECTION-DIFFUSION PROBLEMS WITH MIXED BOUNDARY CONDITIONS*

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Abstract. We present the analysis for the local projection stabilization applied to convection-diffusion problems with mixed boundary conditions. We concentrate on the enrichment approach of the local projection methods. Optimal a-priori error estimates will be proved. Numerical tests confirm the theoretical convergence results. Moreover, the local projection stabilization leads to numerical schemes which work well for problems with several types of layers. Away from layers, the solution is captured very well.

Key words. stabilized finite elements, convection-diffusion

AMS subject classifications. 65N12, 65N30

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