

SPACE-TIME FINITE ELEMENTS FOR THE OPTIMAL CONTROL OF PARABOLIC EQUATIONS

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ABSTRACT

Recently, in [1], we introduced a space-time finite element method for parabolic equations which is robust on space-time locally refined meshes and also easy to implement. In this talk, we show how to apply this method to the optimal control of parabolic equations. We give a short introduction on optimal control of PDE and point out the inherent problems when discretizing optimal control problems of parabolic equations with classical time-stepping methods. Then, we proceed with an a-priori as well as a-posteriori analysis of our new method. Finally, we conclude with some numerical experiments.

REFERENCES

- [1] T. Führer, M. Karkulik. *Space-time least-squares finite elements for parabolic equations*, Comput. Math. Appl., 92 (2021).

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