

Efficient numerical solution of the LQR-problem for the heat equation

Abstract

We discuss how the theory developed by Banks and Kunisch [1] can be applied to a modified version of the heat transfer model introduced by Tröltzsch and Unger [4]. In the numerical implementation we use ALBERT [3] to establish the required FEM–semidiscretisation in space. The resulting algebraic Riccati equation (ARE) is of large dimension ($n > 1000$). It is shown how the LyaPack software package [2] can be used to compute the optimal feedback without solving the ARE directly. In the closing section numerical results are presented comparing different implementational approaches and cost–functions.

References

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