

A Splitting Method for Optimal Control

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- [oper_splt_ctrl.pdf](#)
- [EMBOPT slides](#)
- [Source code \(matlab/C\) and data \(4Mb; tgz format\)](#)

We apply an operator splitting technique to a generic linear-convex optimal control problem, which results in an algorithm that alternates between solving a quadratic control problem, for which there are efficient methods, and solving a set of single-period optimization problems, which can be done in parallel, and often have analytical solutions. In many cases the resulting algorithm is division-free (after some off-line pre-computations) and so can be implemented in fixed-point arithmetic, for example on a field-programmable gate array (FPGA). We demonstrate the method on several examples from different application areas.