

Optimal Control for DAEs, Formal Adjoint and Formal Optimality Conditions

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Abstract: Deriving necessary conditions for the solution of linear-quadratic optimal control problems for DAEs with arbitrary index, one should replace the given DAE by an associated index-reduced DAE. Possessing the same solutions as the original DAE, the reduced DAE allows for a suitable solution operator for the application of abstract results from optimization theory. The resulting necessary conditions are then in terms of the reduced DAE. It was, however, observed that formally replacing the reduced DAE by the original DAE may still make sense to some extent. In this talk, it shall be discussed how this formal approach is related to the necessary conditions and to what extent this relation can be utilized.

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