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17. Control Theory and Optimization

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Optimality Conditions of Singular Controls

The class of problems under consideration is restricted to the optimal control problems with *boundary* conditions. The second-order optimality conditions of singular controls were obtained in [1] for the dynamic system with linear boundary conditions. These conditions were put into the basis of optimal design algorithms and which has resulted in so=called "improvement procedure" allowing to continue the solution process when *singular* controls appear. The results of [1] are extended for the case of nonlinear boundary conditions. The application of these optimality conditions to *singular* optimal control design will also be presented.

References:

O. O. Vasilieva, and K. Mizukami, Optimality Criterion for Singular Controller: Linear Boundary Conditions, *J. Math. Analysis and Applications*, **213** (1997), pp.620-641.