

Infinite horizon optimal control problems in weighted functional spaces

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In this talk, a class of infinite horizon optimal control problems will be considered. The crucial point of the problem setting is the choice of weighted functional spaces, namely weighted Sobolev- and weighted Lebesgue spaces for the state and the control space respectively.

We will discuss the main difficulties of control problems with infinite horizon and motivate the use of weighted functional spaces. Advantages and challenges of using the weighted spaces approach while deriving the existence results, necessary optimality conditions in form of Pontryagin type maximum principle including transversality condition as well as for obtaining numerical solution schemes are the subject of the present talk. Proved results together with demonstrating examples will be shown.