242h A Parametric Approach to Moving Horizon Constrained State Estimation

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Moving horizon least squares formulations have been developed for the estimation of states and model parameters. A key advantage of moving horizon estimation is that constraints, based on a priori knowledge or physical insight of the process, can be included and standard optimization solvers employed. A disadvantage of such an approach is that it may be impractical to execute an optimizer in real-time for some applications. In this paper, we apply a multiparametric method to the moving horizon estimation problem to avoid solving an optimization problem in real time. The method allows the optimization problem to be solved off-line, with only simple function evaluations required for the on-line implementation. An example is given to demonstrate the method.