Highlights

The Beggining of Control Revolution: Ofset-free Koopman MPC

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- Research highlight 1
- Research highlight 2

The Beggining of Control Revolution: Ofset-free Koopman MPC

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Abstract

Keywords:

1. Introduction

2. Preliminaries and Notation

3. Results

Table 1: Comparison of structure of A

Structure	Time TE/MPC	Optimal? [%]	OBJ	ST h_1	ST h_2
Full	0.2392 / 2.3884	26.7	100.0	43	48
Block Diagonal	0.2191 / 1.6204	100.0	94.1	25	31

Table 2: Comparison of several methods

Structure	OBJ u	OBJ y	OBJ	ST h_1	ST h_2
NMPC	4.4568	20.3818	100.0	8	8
Parsim-K	6.0253	24.5910	123.3	27	27
Full C	3.8177	23.8167	111.3	66	78
Block Diagonal C	3.8492	22.4462	105.9	47	42
Full C_k	11.5966	18.9656	123.0	31	23
Block Diagonal C_k	11.5214	19.0154	122.9	30	23

Table 3: Comparison of several Tunings

LP MPC	LP TE	Tuning	OBJ
-	-	$J(x_s)$	171.22
C	C	$J(x_s)$	147.26
$J(x_s)$ w/o y-con	$J(x_{s,k-1})$	$J(x_s)$	149.18
$J(x_k)$	$J(x_k)$	$J(x_s)$	163.69
$J(x_k)$	$J(x_s)$	$J(x_s)$	149.35
-	-	C	156.21
C	C	C	151.73
$J(x_s)$ w/o y-con	$J(x_{s,k-1})$	C	158.80
$J(x_k)$	$J(x_k)$	C	177.33
$J(x_k)$	$J(x_s)$	C	158.68

Table 4: Comparison of several Tunings

ALG	MODEL	OBJ
NMPC	Tru	88.09
MPC	Pa.-K (3)	167.51
MPC	DK	156.21
TMPC	DK (C)	147.22
TMPC	DK (J(z))	149.35