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CORRECTION

Correction to: Optimal control of infinite dimensional bilinear systems: application to the heat and wave equations

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Closure of the set of primitives of critical directions

We need to correct Proposition 6 as follows. Define the new set

$$\widehat{PC_2}(\hat{u}) := \left\{ \begin{array}{l} (w,h) \in L^2(0,T) \times \mathcal{R};\ w \text{ is constant over boundary arcs,} \\ w = 0 \text{ over an initial boundary arc,} \\ w = h \text{ over a terminal boundary arc} \end{array} \right\}. \tag{E1}$$

Proposition 6 *Let* $\hat{u} \in \mathcal{U}_{ad}$ *satisfy* (4.24)–(4.25). *Then* $PC_2(\hat{u})$*, defined before* (3.45)*, satisfies*

$$PC_2(\hat{u}) = \{(w,h) \in \widehat{PC_2}(\hat{u});\ w \text{ is continuous at bang-bang junctions}\}. \tag{E2}$$

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Proof The proof is a simplified version of the one of Proposition 4 in [3]. That result dealt with problems with both upper and lower bounds on the control, as well as state constraints, the latter being absent in the present setting.

Remark 1 *When $\hat{u}$ has no bang-bang switch*, the cones $PC_2(\hat{u})$ and $\widehat{PC_2}(\hat{u})$ coincide.

Sufficient optimality conditions

The statements of Theorem 8, 10 and 11 have to be modified in the following way:

Theorem 8 *Let $\hat{u}$ be a weak minimum for problem (P), satisfying* (4.24)–(4.26). *Then the following assertions hold.*

(a) If there exists $\alpha > 0$ such that

$$\hat{Q}(\xi[w], w, h) \geq \alpha(\|w\|_2^2 + h^2), \quad \textit{for all } (w, h) \in \widehat{PC_2}(\hat{u}), \tag{E3}$$

then the quadratic growth condition (4.29) *is satisfied.*

(b) If the quadratic growth condition (4.29) *is satisfied, then* (4.28) *holds.*

Remark 2 (i) The proof of the above theorem is essentially identical to the one in the published version of the article. It is enough to change $PC_2(\hat{u})$ into $\widehat{PC_2}(\hat{u})$, two lines from below, on p. 741, and at the end of step 1.
(ii) *When $\hat{u}$ has no bang-bang switch,* the cones $PC_2(\hat{u})$ and $\widehat{PC_2}(\hat{u})$ coincide and, therefore, the necessary and sufficient conditions have *no gap*. Hence, in the absence of bang-bang switchings Proposition 6 and Theorem 8 hold as they are in the published version.

Change item (iii) of Theorem 10 into

(iii) if additionally (4.24)–(4.26) *are satisfied, then the following assertions hold.*
  (a) If there exists $\alpha > 0$ such that (E3) *holds, then the quadratic growth condition* (4.29) *is satisfied.*
  (b) If the quadratic growth condition (4.29) *is satisfied, then* (4.28) *holds.*

Change item (iii) of Theorem 11 into

(iii) if additionally (4.24)–(4.26) *are satisfied, then the following assertions hold.*
  (a) If there exists $\alpha > 0$ such that (E3) *holds, then the quadratic growth condition* (4.29) *is satisfied.*
  (b) If the quadratic growth condition (4.29) *is satisfied, then* (4.28) *holds.*

Remark 3 Analogously as stated in Remark 2, when the optimal control has no bang-bang switch, Theorem 10 and 11 hold as they are in the published version.

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