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ERRATUM

Erratum to: Averaging and Linear Programming in Some Singularly Perturbed Problems of Optimal Control

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The proof of Theorem 3.14 is based on several lemmas, one of which is Lemma 5.3. The argument used in the proof of the latter is based on the fact that, for any $(\bar{u}, \bar{y}) \in cl\theta_t^*$, where

$$\theta_t^* \stackrel{\text{def}}{=} \{(u, y) \ : \ (u, y) = (u_t^*(\tau), y_t^*(\tau)) \quad \text{for some} \quad \tau \in [0, \infty)\}$$

$((u_t^*(\tau), y_t^*(\tau))$ being the admissible pair of the associated system introduced in Assumption 3.11(iii)),

$$\mu^*(t)(B_r(\bar{u}, \bar{y})) > 0 \quad \forall r > 0, \tag{1.1}$$

where $\mu^*(t)$ is the occupational measure generated by $(u_t^*(\tau), y_t^*(\tau))$ and $B_r(\bar{u}, \bar{y}) \stackrel{\text{def}}{=} \{(u, y) \ : \ ||u - \bar{u}|| + ||y - \bar{y}|| < r\}$ (see (5.55)).

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The proof of (1.1) offered in the paper is valid, however, only under the assumption that the pair $(u_t^*(\tau), y_t^*(\tau))$ is periodic. That is,

$$(u_t^*(\tau), y_t^*(\tau)) = (u_t^*(\tau + T_t), y_t^*(\tau + T_t)) \ \ \forall \tau \geq 0 \tag{1.2}$$

for some $T_t > 0$.

This observation readily leads to the conclusion that, for the statement of Theorem 3.14 to be valid, one needs to replace the assumption about the validity of (3.67) by the periodicity assumption (1.2), in which T_t should be uniformly bounded for almost all $t \geq 0$. Note that the statement of the theorem can be also proved to be valid in case one just assumes (in additions to the assumptions made in the paper) that (1.1) is valid for any $(\bar{u}, \bar{y}) \in \theta_t^*$ and for almost all $t \geq 0$.