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CORRECTION

Correction to: Primal-Dual Optimization Conditions for the Robust Sum of Functions with Applications

N. Dinh[1] · M. A. Goberna[2] · M. Volle[3]

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Correction to:

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The authors would like to correct the errors caused by a wrong equation ($A = B + \overline{z}$), at the end of the proof of Lemma 2.1 in the original article, which affects this lemma, two subsequent examples, as well as other statements spread along the paper.

The statement of the mentioned lemma asserts that, given a family $(A_i)_{i\in I}$ of convex subsets of a linear space Z such that $\bigcap_{i\in I} A_i \neq \emptyset$, $A := \bigcup_{J\in\mathcal{F}(I)} \sum_{j\in J} A_j$ is a convex subset of Z. This is not true when one takes an arbitrary $\overline{z} \in Z$, $\overline{z} \neq 0_Z$, and the sets $A_i = \{\overline{z}\}$ for all $i \in I$, as the set $A = \bigcup_{J\in\mathcal{F}(I)} |J| \{\overline{z}\} = \bigcup_{n\geq 1} n \{\overline{z}\}$ cannot be convex.

We now give the corrected version of this lemma and subsequent examples.

Lemma 2.1 *Let $(A_i)_{i\in I}$ be a family of convex subsets of a linear space Z such that $0_Z \in \bigcap_{i\in I} A_i$. Then $A := \bigcup_{J\in\mathcal{F}(I)} \sum_{j\in J} A_j$ is a convex subset of Z.*

Proof Notice that $\left(\sum_{j\in J} A_j\right)_{J\in\mathcal{F}(I)}$ is a family of convex subsets of Z which is directed with respect to the inclusion. It follows that A is convex. □

The original article can be found online at https://doi.org/10.1007/s00245-019-09596-9.

✉ M. A. Goberna
mgoberna@ua.es

N. Dinh
ndinh02@gmail.com

M. Volle
michel.volle@univ-avignon.fr

1 International University, Vietnam National University-HCMC, Linh Trung Ward, Thu Duc District, Ho Chi Minh City, Vietnam

2 Department of Mathematics, University of Alicante, San Vicente del Raspeig, Alicante, Spain

3 Avignon University, LMA EA 2151, Avignon, France

Example 2.1 The set $\mathcal{A} = \bigcup_{J \in \mathcal{F}(I)} \sum_{j \in J} \operatorname{epi} f_j^*$ is convex if the functions f_j, $j \in J$, are non-negative.

Example 2.2 The set $A := \bigcup_{J \in \mathcal{F}(I)} \sum_{j \in J} \operatorname{dom} f_j^*$ is convex if each function f_j, $j \in J$, is bounded below.

Other corrections provoked by the above changes:

- Replace at the proof of Corollary 3.1 "Example 2.1" by "Example 2.2".
- Replace at Remark 3.4 the paragraph "If the functions ... is convex and the criteria" by "If each function f_i, $i \in I$, is bounded below, then (see Example 2.2) the criteria".
- Replace, at the third of the listed properties of the qualifying set $\mathcal{A}$, at the beginning of Section 5, and at the statements of Propositions 5.1–5.4, "$\bigcap_{i \in I} A_i \neq \emptyset$" by "$0_{X^*} \in \bigcap_{i \in I} A_i$" and "$\sup_{i \in I} t_i < +\infty$ (or $\sup_{i \in I} t_i \neq +\infty$)" by "$\sup_{i \in I} t_i \leq 0$".

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