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Corrigendum to : "Commutator of anisotropic maximal function with BMO functions on total anisotropic Morrey spaces"

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Abstract. *The purpose of this note is to correct an error in an earlier paper by the authors : Commutator of anisotropic maximal function with BMO functions on total anisotropic Morrey spaces, Trans. Natl. Acad. Sci. Azerb. Ser. Phys.-Tech. Math. Sci., Issue Mathematics.*

Keywords. total anisotropic Morrey spaces, anisotropic maximal operator, commutator, BMO spaces

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In [1] we study anisotropic maximal commutators M_b^d and commutators of the anisotropic maximal operator $[b, M^d]$ in total anisotropic Morrey spaces $L^d_{p,\lambda,\mu}(\mathbb{R}^n)$ when b belongs to $BMO(\mathbb{R}^n)$. The main goal of the paper [1] is to give necessary and sufficient conditions for the boundedness of the anisotropic maximal commutator M_b^d and the commutators of the anisotropic maximal operator $[b, M^d]$ on $L^d_{p,\lambda,\mu}(\mathbb{R}^n)$ when b belongs to $BMO(\mathbb{R}^n)$. New characterizations of some subclasses of $BMO(\mathbb{R}^n)$ are obtained.

We assume that the reader is familiar with the contents and notation in the aforementioned paper [1].

In the paper [1] the author omitted the condition $\mu \le \lambda$ in inequalities (2.1), (2.2) and in Lemmas 2.1, 2.2. Otherwise, inequalities (2.1), (2.2) and the statements of Lemmas 2.1, 2.2 are false.

Therefore, the correct form of inequalities (2.1), (2.2) and Lemmas 2.1, 2.2 must be the following form.

$$L^d_{p,\lambda,\mu}(\mathbb{R}^n) \subset\!\succ L^d_{p,\lambda}(\mathbb{R}^n),\ \mu \le \lambda \ \text{ and } \ \|f\|_{L^d_{p,\lambda}} \le \|f\|_{L^d_{p,\lambda,\mu}},$$

$$L^d_{p,\lambda,\mu}(\mathbb{R}^n) \subset\!\succ L^d_{p,\mu}(\mathbb{R}^n),\ \mu \le \lambda \ \text{ and } \ \|f\|_{L^d_{p,\mu}} \le \|f\|_{L^d_{p,\lambda,\mu}}$$

Lemma 0.1 *If $0 < p < \infty$, $0 \le \mu \le \lambda \le |d|$, then*

$$L^d_{p,\lambda,\mu}(\mathbb{R}^n) = L_{p,\lambda}(\mathbb{R}^n) \cap L_{p,\mu}(\mathbb{R}^n)$$

and

$$\|f\|_{L^d_{p,\lambda,\mu}(\mathbb{R}^n)} = \max\left\{\|f\|_{L^d_{p,\lambda}}, \|f\|_{L^d_{p,\mu}}\right\}.$$

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Lemma 0.2 *If* $0 < p < \infty$, $0 \le \mu \le \lambda \le |d|$, *then*

$$WL^d_{p,\lambda,\mu}(\mathbb{R}^n) = WL_{p,\lambda}(\mathbb{R}^n) \cap WL_{p,\mu}(\mathbb{R}^n)$$

and

$$\|f\|_{WL^d_{p,\lambda,\mu}(\mathbb{R}^n)} = \max\left\{\|f\|_{WL^d_{p,\lambda}}, \|f\|_{WL^d_{p,\mu}}\right\}.$$

References

1. Omarova, M.N., Abasova, G.A.: *Commutator of anisotropic maximal function with BMO functions on total anisotropic Morrey spaces*, Trans. Natl. Acad. Sci. Azerb. Ser. Phys.-Tech. Math. Sci. 43 (1), Mathematics, 3-15 (2023).