Corrigendum to
"An improvement on Olson's constant for $\mathbb{Z}_p \oplus \mathbb{Z}_p$"
(Acta Arith. 141 (2010), 311–319)

by

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In [1] all zero-sum free sets of maximal size in $\mathbb{Z}_p \oplus \mathbb{Z}_p$ are described. However there is a case that escaped our attention which we correct in the following.

THEOREM 2. *Let $p > 6000$ be a prime number, and $A \subseteq \mathbb{Z}_p^2$ be a zero-sum free set of size $p - 2 + \mathrm{Ol}(\mathbb{Z}_p^2)$. Then there exists a subgroup $U \cong \mathbb{Z}_p$ such that one of the following holds:*

(1) *$|A \cap U| = \mathrm{Ol}(\mathbb{Z}_p) - 1$, and all other elements of A are contained in a coset $x + U$ of U;*
(2) *$|A \cap U| = \mathrm{Ol}(\mathbb{Z}_p) - 1$, there are $p - 2$ elements in one coset $x + U$ and one element in $2x + U$, and the sum of all elements in $A \setminus U$ is a non-zero element in $U \setminus -\Sigma(A \cap U)$.*

The mistake lies in the last lines of the proof of Lemma 4. We obtain a zero sum in $\pi_U(A)$ using some but not all elements of $\pi_U(B)$, unless one of the two conditions of the theorem holds. In fact, this is equivalent to the statement that every sequence of length $p-1$ in $\mathbb{Z}_p$ which contains 1 at least $p - 8$ times contains a zero sum using some but not all of the 1's, unless the sequence is up to permutation either $1, \ldots, 1$ or $1, \ldots, 1, 2$. The latter possibility was overlooked in [1].

Theorem 1, the main result of [1], is not affected by these changes.

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[99]

References

[1]   G. Bhowmik and J.-C. Schlage-Puchta, *An improvement on Olson's constant for* $\mathbb{Z}_p \oplus \mathbb{Z}_p$, Acta Arith. 141 (2010), 311–319.

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