Erratum: Maximal arithmetic progressions in random subsets

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Abstract

Slight errors in the constants in [1] are corrected.

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The following errors in [1] need to be corrected.

1. In (1), one needs to replace $\leq$ by $<$. Thus, the statement should read

$$\lim_{N\to\infty} \exp\left(\lambda(x_N)\right) \mathbb{P}\left[W^{(N)} < C\log N + x_N\right] = 1\,. \qquad (0.1)$$

2. In (2) the second $\log$ should be $\log_2$. That is, the statement should read:
   Similarly, let $\{y_N\}$ be a sequence such that $C\log N - \log_2(2C\log N) + y_N \in \mathbb{Z}$ for all N, and $\inf_N y_N \geq b$, for some $b \in \mathbb{R}$. Then,

$$\lim_{N\to\infty} \exp\left(\lambda(y_N)\right) \mathbb{P}\left[U^{(N)} \leq C\log N - \log_2(2C\log N) + y_N\right] = 1\,. \qquad (0.2)$$

The source for the missing factor $1/2$ in (1) is that in order to avoid ambiguities, the range of p in the definitions of $W_{s,p}, W'_{s,p}, I_{s,p}$ should be restricted to $p \leq N/2$ (instead of $p \leq N$), because in fact if $W'_{s,p} = L$ then $W'_{s',p'} = L$ for $s' = s + Lp(\mathrm{mod}\,N)$, $p' = N - p$. Then, in the first display of the proof of Theorem 1, N^2 is replaced by $N^2/2$.

Remark. A corrected version has been uploaded to the arXiv: arXiv:0707.3888

References

[1] I. Benjamini, A. Yadin and O. Zeitouni, Maximal arithmetic progressions in random subsets, *Elect. Comm. in Probab.* **12** (2007), 365–376. MR-2350574

[2] M.-Z. Zhao and H.-Z. Zhang, On the longest length of arithmetic progressions, arXiv:1204.1149 (2012).

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