Electron. Commun. Probab. **21** (2016), no. 33, 1–1.
DOI: 10.1214/16-ECP1
ISSN: 1083-589X

ELECTRONIC COMMUNICATIONS in PROBABILITY

Erratum: An Erdős-Rényi law for nonconventional sums

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Abstract

This erratum corrects a piece in the proof of the lower bound for an Erdős-Rényi law of large numbers in the nonconventional setup obtained in [1].

Keywords: laws of large numbers; large deviations; nonconventional setup.
AMS MSC 2010: 60F15.
Submitted to ECP on April 4, 2016, final version accepted on April 8, 2016.

1 Correction

The inequality (3.14) in [1] is not correct since it is not true that events $C_m = \{S_{m+b_n} - S_m \le b_n(\alpha - \varepsilon)\}$ there are independent when $(1-\ell^{-1})n \le m \le n - b_n$. On the other hand, the events C_{mb_n} are indeed independent for different m when $(1-\ell^{-1}) \le mb_n \le n - b_n$, and so (3.14) should be replaced by

$$P(B_n(\varepsilon)) \le \prod_{m:\,(1-\ell^{-1})n \le mb_n \le n-b_n} P(C_{mb_n}).$$

Now in (3.16) we have to replace the powers $\frac{n}{2\ell}$ and $\frac{n^\delta}{2\ell}$ by $\frac{n}{\ell b_n} - 2$ and $\frac{n^\delta}{\ell b_n} - 1$, respectively, and the remaining arguments remain true.

References

[1] Yu. Kifer, *An Erdős-Rényi law for nonconventional sums*, Electron. Commun. Probab. 20 (2015), no. 83, 1–8, doi: 10.1214/ECP.v20-4613. MR-3434200

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