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ERRATA

UNIFORM ORDER STATISTICS PROPERTY AND ℓ_∞-SPHERICAL DENSITIES

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Professor Taizhong Hu has pointed out to us that the interpretation that follows the definition of the UOSP($\leq$) property in page 287 in the above paper is incorrect. As a consequence, Theorem 4.7 and Remark 4.8 in the above paper need to be modified.

In order to do that, we replace the definition of the UOSP($\leq$) property in the above paper by two definitions that are given below. Let the discrete random variables $X_1, X_2, \ldots$ be such that $P\{0 \leq X_1 \leq X_2 \leq \cdots\} = 1$. We say that these X_i's have the UOSP$_1$($\leq$) property if for discrete $0 \leq x_1 \leq x_2 \leq \cdots \leq x_k \leq t$ we have

$$P\{X_1 = x_1, X_2 = x_2, \ldots X_k = x_x | X_k \leq t, X_{k+1} > t\} = \frac{k!}{j_0! j_1 \cdots j_t!}\left(\frac{1}{t+1}\right)^k,$$

where, for $l \in \{0, 1, \ldots, t\}$, j_l is the number of values in $\{x_1, x_2, \ldots, x_k\}$ that are equal to l. That is, conditional on $X_k \leq t$ and $X_{k+1} > t$, the random variables $X_1 \leq X_2 \leq \cdots \leq X_k$ are distributed as order statistics of a sample of size k drawn from the set $\{0, 1, \ldots, t\}$ *with replacement*. On the other hand, we say that these X_i's have the UOSP$_2(\leq)$ property if for discrete $0 \leq x_1 \leq x_2 \leq \cdots \leq x_k \leq t$ we have

$$P\{X_1 = x_1, X_2 = x_2, \ldots X_k = x_x | X_k \leq t, X_{k+1} > t\} = \binom{t+k}{k}^{-1};$$

this is the definition of the UOSP$(\leq)$ property given in the original paper. The meaning of this definition is that conditional on $X_k \leq t$ and $X_{k+1} > t$, the random variables $X_1 \leq X_2 \leq \cdots \leq X_k$ are distributed as order statistics of a sample of size k drawn from the set $\{0, 1, \ldots, t\}$ *with double replacement*; see (23) in page 184 of de Finetti (1975) and see also Exercise 1.62 in page 41 of Spizzichino (2001).

With these definitions we first note that Proposition 4.2 in the original paper remains correct if UOSP$(\leq)$ is understood to mean UOSP$_2(\leq)$.

Next, let $\{B(t),\ t = 0, 1, \ldots\}$ be a nondecreasing discrete-time discrete-state random process as described in page 291 of the original paper, and let $T_1, T_2, \ldots$ be the corresponding "unit jump" times, again, as described in page 291 of the original paper. We say that the process $\{B(t), t = 0, 1, \ldots\}$ has the UOSP$_1(\leq)$ [respectively, UOSP$_2(\leq)$] property if $T_1, T_2, \ldots$ have the UOSP$_1(\leq)$ [respectively, UOSP$_2(\leq)$] property. Then

- item (i) in Theorem 4.7 of the original paper, with UOSP$_1(\leq)$ instead of UOSP$(\leq)$, is equivalent to item (ii) of that theorem, and
- item (i) in Theorem 4.7 of the original paper, with UOSP$_2(\leq)$ instead of UOSP$(\leq)$, is equivalent to each of the items (iii), (iv), and (v) of that theorem.

Finally there are a couple of minor corrections in Remark 4.8. In lines 1 and 8 on page 295, UOSP$_2(\leq)$ should replace UOSP$(\leq)$. The claim that the processes from Theorem 4.5 satisfy "a version of the statement in Theorem 4.7(ii)" is not true.

References

1. de Finetti, B. (1975). *Theory of Probability, Volume 2*. John Wiley & Sons, London.
2. Spizzichino, F. (2001). *Subjective Probability Models for Lifetimes*. Chapman & Hall/CRC, Boca Raton.