symmetry

MDPI

Erratum

Kim, T. et al. Degenerate Stirling Polynomials of the Second Kind and Some Applications. *Symmetry*, 2019, *11*(8), 1046

Taekyun Kim [1], Dae San Kim [2], Han Young Kim [1] and Jongkyum Kwon [3,*]

1 Department of Mathematics, Kwangwoon University, Seoul 139-701, Korea; tkkim@kw.ac.kr (T.K.); gksdud213@kw.ac.kr (H.Y.K.)
2 Department of Mathematics, Sogang University, Seoul 121-742, Korea; dskim@sogang.ac.kr
3 Department of Mathematics Education and ERI, Gyeongsang National University, Jinju 52828, Korea
* Correspondence: mathkjk26@gnu.ac.kr; Tel.: +82-055-772-2252

Received: 28 November 2019; Accepted: 13 December 2019; Published: 17 December 2019

Corrigendum

The authors wish to make the following corrections to the published paper [1]:
Equations (31) and (32) must be replaced as follows:

$$P[Y=y|Y\geq 0]=p(y)=e_{\lambda}^{-1}(\alpha)\frac{\alpha^{y}(1)_{y,\alpha}}{y!} \tag{31}$$

by

$$P[Y=y|Y\geq 0]=p(y)=e_{\lambda}^{-1}(\alpha)\frac{\alpha^{y}(1)_{y,\lambda}}{y!}.$$

$$P[X=x|X>0]=p(x)=\frac{1}{1-e_{\lambda}^{-1}(\alpha)}e_{\lambda}^{-1}(\alpha)\frac{(1)_{x,\alpha}\alpha^{x}}{x!} \tag{32}$$

by

$$P[X=x|X>0]=p(x)=\frac{1}{1-e_{\lambda}^{-1}(\alpha)}e_{\lambda}^{-1}(\alpha)\frac{(1)_{x,\lambda}\alpha^{x}}{x!}.$$

In lines 8 and 10 from the top of page 7, $(1)_{x,\alpha}$ should be replaced by $(1)_{x,\lambda}$. We rewrite those equations as follows:

Note that

$$\sum_{y=0}^{\infty}p(y)=e_{\lambda}^{-1}(\alpha)\sum_{y=0}^{\infty}\frac{\alpha^{y}(1)_{y,\lambda}}{y!}=1,$$

and

$$\sum_{x=1}^{\infty}p(x)=\frac{1}{e_{\lambda}(\alpha)-1}\sum_{x=1}^{\infty}\frac{(1)_{x,\lambda}\alpha^{x}}{x!}=1.$$

In Equations (33) and (35), $(1)_{x,\alpha}$ should be replaced by $(1)_{x,\lambda}$. We rewrite those equations as follows:

$$\begin{aligned} E[t^{X_j}] &= \sum_{x=1}^{\infty} P[X_j = x]t^x \\ &= \frac{1}{e_\lambda(\alpha) - 1} \sum_{x=1}^{\infty} \frac{(1)_{x,\lambda}\alpha^x}{x!} t^x \\ &= \frac{1}{e_\lambda(\alpha) - 1}(e_\lambda(\alpha t) - 1), \end{aligned} \tag{33}$$

$$\begin{aligned} E[t^Y] &= \sum_{y=0}^{\infty} P[Y = y]t^y = e_\lambda^{-1}(\alpha) \sum_{y=0}^{\infty} \frac{\alpha^y (1)_{y,\lambda}}{y!} t^y \\ &= e_\lambda^{-1}(\alpha) e_\lambda(\alpha t). \end{aligned} \tag{35}$$

In Equations (38), (40) and (41) on page 8–9, $(1)_{x,\alpha}$ should be replaced by $(1)_{x,\lambda}$. We rewrite those equations as follows:

$$P[X = x | X \geq r] = p(x) = \frac{e_\lambda^{-1}(\alpha)}{1 - e_\lambda^{-1}(\alpha) \sum_{x=0}^{r-1} \frac{\alpha^x (1)_{x,\lambda}}{x!}} \frac{\alpha^x (1)_{x,\lambda}}{x!}, \tag{38}$$

$$\begin{aligned} E[t^{X_j}] &= \sum_{n=r}^{\infty} P[X_j = n]t^n \\ &= \sum_{n=r}^{\infty} \left(\frac{1}{e_\lambda(\alpha) - \sum_{j=0}^{r-1} \frac{(1)_{j,\lambda}}{j!} \alpha^j} \right) \frac{\alpha^n (1)_{n,\lambda}}{n!} t^n \\ &= \left(\frac{1}{e_\lambda(\alpha) - \sum_{j=0}^{r-1} \frac{(1)_{j,\lambda}}{j!} \alpha^j} \right) \left(e_\lambda(\alpha t) - \sum_{j=0}^{r-1} \frac{(1)_{j,\lambda}\alpha^j}{j!} t^j \right) \\ &= C_\lambda(\lambda, r) \left(e_\lambda(\alpha t) - \sum_{j=0}^{r-1} \frac{(1)_{j,\lambda}}{j!} \alpha^j t^j \right), \end{aligned} \tag{40}$$

where $C_\lambda(\lambda, r) = \frac{1}{e_\lambda(\alpha) - \sum_{j=0}^{r-1} \frac{(1)_{j,\lambda}}{j!} \alpha^j}$.

$$\prod_{j=1}^{k} E[t^{X_j}] = C_\lambda^k(\lambda, r) \left(e_\lambda(\alpha t) - \sum_{j=0}^{r-1} \frac{(1)_{j,\lambda}\alpha^j}{j!} t^j \right)^k. \tag{41}$$

In lines 5 and 6 from top on page 9, $(1)_{x,\alpha}$ should be replaced by $(1)_{x,\lambda}$.

$$\begin{aligned} E[t^{X+Y}] &= k! C_\lambda^k(\lambda, r) \frac{1}{k!} \left(e_\lambda(\alpha t) - \sum_{j=0}^{r-1} \frac{(1)_{j,\lambda}}{j!} \alpha^j t^j \right)^k e_\lambda^{-1}(\alpha) e_\lambda(\alpha t) \\ &= k! C_\lambda^k(\lambda, r) e_\lambda^{-1}(\alpha) \frac{1}{k!} \left(e_\lambda(\alpha t) - \sum_{j=0}^{r-1} \frac{(1)_{j,\lambda}}{j!} \alpha^j t^j \right)^k e_\lambda(\alpha t) \\ &= \sum_{n=kr}^{\infty} \frac{k! C_\lambda^k(\lambda, r)}{e_\lambda(\alpha)} S_{2,\lambda}^{(1)}(n, k \mid r) \frac{\alpha^n}{n!} t^n. \end{aligned}$$

In Equation (44) on page 9, $(1)_{x,\alpha}$ should be replaced by $(1)_{x,\lambda}$.

The authors apologize for any convenience caused to the readers. The changes do not affect the results.

Reference

1. Kim, T.; Kim, D.S.; Kim, H.Y.; Kwon, J. Degenerate Stirling polynomials of the secind kind and some applications. *Symmetry* **2019**, *11*, 1046. [CrossRef]