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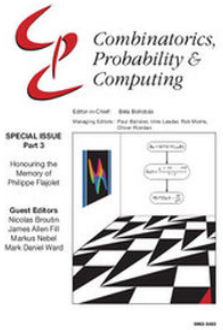
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CORRIGENDUM

‘The Asymptotic Number of Connected d -Uniform Hypergraphs’ — CORRIGENDUM

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The authors would like to rectify a mistake made in Theorem 1.1 of their article (Behrisch, Cojaa-Oghlan & Kang 2014), published in issue 23 (3). The text below explains the changes required.

1. Correction to Theorem 1.1

The formula for the probability that the random hypergraph $H_d(n, m)$ is connected given in [1, Theorem 1.1] is incorrect. With $H_d(n, m)$ denoting the random d -uniform hypergraph with n vertices and m edges, the correct version of Theorem 1.1 reads as follows.

Theorem 1.1. *Let $d \geq 2$ be a fixed integer. For any compact set $\mathcal{J} \subset (d(d-1)^{-1}, \infty)$ and for any $\delta > 0$ there exists $n_0 > 0$ such that the following holds. Let $m = m(n)$ be a sequence of integers such that $\zeta = \zeta(n) = dm/n \in \mathcal{J}$ for all n . There exists a unique number $0 < r = r(n) < 1$ such that*

$$r = \exp\left(-\zeta \cdot \frac{(1-r)(1-r^{d-1})}{1-r^d}\right). \quad (1.1)$$

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Let $\Phi_d(r, \zeta) = r^{\frac{r}{1-r}}(1-r)^{1-\zeta}(1-r^d)^{\frac{\zeta}{d}}$ for $d \geq 2$. Furthermore, define, for $d > 2$,

$$R_d(n, m) = \frac{1 - r^d - (1 - r)(d - 1)\zeta r^{d-1}}{\sqrt{(1 - r^d + \zeta(d - 1)(r - r^{d-1}))(1 - r^d) - d\zeta r(1 - r^{d-1})^2}} \cdot \exp\left(\frac{(d - 1)\zeta(r - 2r^d + r^{d-1})}{2(1 - r^d)}\right) \cdot \Phi_d(r, \zeta)^n,$$

and for $d = 2$,

$$R_2(n, m) = \frac{1 + r - \zeta r}{\sqrt{(1 + r)^2 - 2\zeta r}} \cdot \exp\left(\frac{2\zeta r + \zeta^2 r}{2(1 + r)}\right) \cdot \Phi_2(r, \zeta)^n.$$

Finally, let $c_d(n, m)$ denote the probability that $H_d(n, m)$ is connected. Then for all $n > n_0$ we have

$$(1 - \delta)R_d(n, m) < c_d(n, m) < (1 + \delta)R_d(n, m).$$

2. Correction to the proof of Theorem 1.1

The mistake in [1, Theorem 1.1] derives from an error in [1, Lemma 2.1]. Specifically, the expression given for v in [1, equation (2.4)] has to be replaced by

$$v = \exp\left(\frac{(d - 1)rc}{2(1 - r)}(1 - 2r^{d-1} + r^{d-2})\right).$$

With this correction, the argument given in [1, Section 2] yields the correct result as stated above.

The erroneous formula [1, equation (2.4)] stems from [3, Lemma 10], where the expression

$$\exp\left[b_5m - \mu - \frac{(d - 1)(1 - a_5)b_5c}{2}\right]$$

has to be replaced by

$$\exp\left[b_5m - \mu - \frac{(d - 1)(1 - a_5)b_5c}{2a_5}\right].$$

The a_5 in the denominator slipped into [3, Section 3.2] in the step from equation (22) to the equation following (23).

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References

[1] Behrisch, M., Coja-Oghlan, A. and Kang, M. (2014) The asymptotic number of connected d -uniform hypergraphs. *Combin. Probab. Comput.* **23** 367–385.

- [2] Bollobás, B. and Riordan, M. (2014) Counting connected hypergraphs via the probabilistic method. [arXiv:1404.5887](https://arxiv.org/abs/1404.5887)
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