**Erratum: Entanglement by Path Identity
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The statement that the experimental setup shown in Fig. 2(a) in Chap. III of the Supplemental Material creates a five-dimensional six-photon GHZ state is incorrect, as pointed out to us by Xuemei Gu. Likewise, the generalization of that statement in the main text for $n \geq 5$ photons with $d \geq 3$ dimensions is also incorrect. The reason is that more terms than just those of a GHZ state appear in the quantum superposition of the state realized by the setup in that Supplemental Material Fig. 2(a) and its generalizations. For example, the experimental setup for $n = 6$ photons with $d = 3$ dimensions produces the state $|\psi\rangle = 1/2 (|0, 0, 0, 0, 0, 0\rangle + |1, 1, 1, 1, 1, 1\rangle + |2, 2, 2, 2, 2, 2\rangle + |1, 2, 1, 2, 0, 0\rangle)$, where the first three terms are those of the GHZ state and the last term is the additional term. Detailed analysis of these additional terms have led to a new surprising link between quantum experiments and graph theory, which two of us present together with Xuemei Gu in Ref. [1].

All other results of the Letter remain valid. Particularly, all specific examples besides the one mentioned above are correct.

- [1] M. Krenn, X. Gu, and A. Zeilinger, Quantum experiments and graphs: Multipart states as coherent superpositions of perfect matchings, [arXiv:1705.06646](https://arxiv.org/abs/1705.06646).