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Corrigendum to "On the existence of Hamiltonian cycles in hypercubes" [Notes on Number Theory and Discrete Mathematics, 2026, 32(1), 198–206]

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The purpose of the present corrigendum is to acknowledge an earlier result by Robinson and Cohn [4], which was not cited in our article [2] due to our unawareness of their work when preparing our manuscript. Our research arose independently from the study of Euclidean tours on multidimensional chessboards, as documented in [1, 3].

In particular, the explicit geometric procedure for extending a Euclidean knight's tour from $C(2,k)$ to $C(2,k+1)$ was developed independently by Marco Ripà and published in the proof of Theorem 4.1 of [3]. This construction, which can be iterated to obtain tours in arbitrarily higher dimensions, was subsequently applied to other fairy chess leapers in the proofs of Theorems 3.2 and 3.3 of [1], and further generalized in the proof of Theorem 2.2 of [2].

In May and June 2024, we deposited explicit Hamiltonian Threeleaper and Zebra tours in $C(2,11)$ and $C(2,15)$, respectively, on Zenodo (https://doi.org/10.5281/zenodo.11199717 and https://doi.org/10.5281/zenodo.11490687). These datasets predate [2] and document the computational work supporting [1].

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Robinson and Cohn consider closed sequences in which every binary n-tuple occurs exactly once and consecutive tuples have a fixed Hamming distance t. In particular, Remark 4 on page 21 of [4] establishes the existence of such sequences for every odd $t < n$. Since the squared Euclidean distance between two binary vectors equals their Hamming distance, taking $n = k$ and $t = h$ shows that their result already establishes the existence statement of Theorem 2.2 of [2]. Consequently, Corollary 2.1 of [2] also follows from the earlier result, together with the elementary parity and distance restrictions, upon setting $h = a^2 + b^2$. Moreover, the alternate-word complementation used in the first part of our proof of Theorem 2.2 had already appeared in Construction 2 on page 19 of [4].

Our proof also gives an explicit geometric lifting procedure. The doubling-and-switching construction transforms a Hamiltonian cycle in $C(2, k)$ into a Hamiltonian cycle in $C(2, k + 1)$ while preserving the prescribed Euclidean distance. This is the generalization of the inductive method previously developed in [3] and employed in [1]. The existence statement of [4] does not establish this specific geometric construction; Robinson and Cohn give their own constructive approach using linear codes and cosets.

We therefore fully acknowledge Robinson and Cohn's priority concerning the general existence result and the alternate-word complementation procedure. Although the mathematical statements of Theorem 2.2 and Corollary 2.1 in [2] remain valid, their existence conclusions already follow from the earlier work and cannot be regarded as new. We regret this omission and thank the reader who brought the earlier publication to our attention.

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