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Zaks, Joseph

A discrete form of the Beckman-Quarles theorem for rational spaces. (English)

J. Geom. 72, No.1-2, 199-205 (2001). [ISSN 0047-2468]
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Let $A = \{4k(k+1) : k = 1, 2, 3, \ldots\} \cup (\{k^2 : k = 1, 2, 3, \ldots\} \cap \{2k^2 - 1 : k = 2, 3, 4, \ldots\})$. The author proves: if $n \in A$ and $x, y \in \mathbb{Q}^n$, then there exists a finite set $\{x, y\} \subseteq S_{xy} \subseteq \mathbb{Q}^n$ such that for every unit-distance preserving mapping $f : S_{xy} \to \mathbb{Q}^n$, $\|f(x) - f(y)\| = \|x - y\|$ holds.
The theorem for $n = 8$ was earlier proved by *A. Tyszka* [Aequationes Math. 62, No. 1-2, 85-93 (2001; Zbl pre01655961)].

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