

Hypercube embeddings and Cayley graphs generated by transpositions

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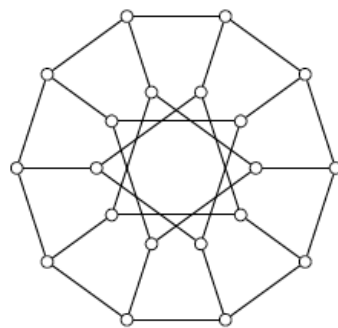
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Abstract

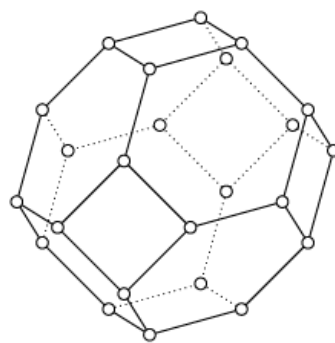
A graph is called a partial cube if it can be embedded into a hypercube isometrically. In this paper, we study a class of Cayley graphs —Cayley graphs generated by transpositions and show that a Cayley graph Γ generated by transpositions is a partial cube if and only if Γ is a bubble sort graph. This result enhances a result of Alahmadi et al. [Math. Meth. Appl. Sci. 39 (2016), 4856–4865]: BS_n is a partial cube. As a corollary, we give the analytical expressions of the Wiener indices of bubble sort graphs.

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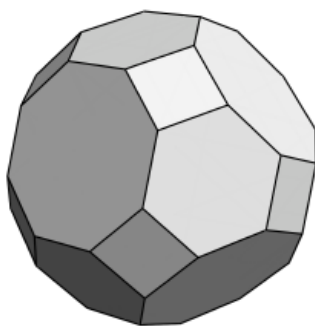
partial cube_200924.pdf available at <https://authorea.com/users/413905/articles/522084-hypercube-embeddings-and-cayley-graphs-generated-by-transpositions>



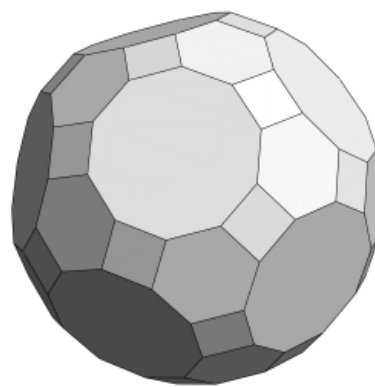
(a) $G(10, 3)$



(b) Cubic permutahedron



(c) Truncated cuboctahedron



(d) Truncated icosidodecahedron