On *additive detour subgraphs*

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**Abstract**

A spanning subgraph $G$ of a graph $H$ is a *$k$-detour subgraph* of $H$ if for each pair of vertices $x, y \in V(H)$, the distance, $\text{dist}_G(x, y)$, between $x$ and $y$ in $G$ exceeds that in $H$ by at most $k$. Such subgraphs sometimes also are called *additive spanners*.

Construction of spanners with few edges and/or low maximum degree has attracted considerable attention in computer science lately.

We study $k$-detour subgraphs of the $n$-dimensional cube, $Q^n$, with few edges or with moderate maximum degree.