Rainbow Connectivity in Certain Cayley Graphs

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The (strong) rainbow connection number of a connected graph $G$, denoted $\text{s}rc(G)$, is the smallest number of colors needed to color the edges of $G$ so that for each pair of vertices of $G$ there is a (geodesic) rainbow path with those vertices at its ends. We give results on rainbow connectivity in the connected Hamming graphs, which are Cayley graphs based in the abelian groups $(\mathbb{Z}_q)^n$. For instance, for $q = 2$ we have the mother of all Hamming graphs, the $n$-cube, $Q_{n}$, about which it is easy to see that $\text{src}(Q_{n}) = \text{rc}(Q_{n}) = \text{diam}(Q_{n}) = n$. This raises questions about Cayley graphs in general.