Abstract

Operator quantum error-correcting codes (OQECCs), also known as subsystem codes, can effectively protect quantum information from interference by encoding quantum information in the tensor factor of the subspace of the physical state space. Let $R=F_{q^2}+v F_{q^2}$, where $v^2=v$ and q is an odd prime. In this paper, by designing some flexible defining sets of the Gray images of Hermitian dual-containing constacyclic codes of length (q^2-1)/2s over R, we construct two new infinite families of maximum distance separable (MDS) OQECCs. Notably, the parameters of these MDS OQECCs are new, and not covered by well-known MDS OQECCs constructed from previous literature.