Abstract

Minimal codes are a special type of linear codes, which have nice applications in secret sharing and secure two-party computation. How to construct new infinite family of minimal codes has been a hot topic in coding theory and cryptography. In this paper, by employing exponential sums, we study the Lee-weight enumerator of several classes of linear codes from defining sets over the finite chain ring F_q+uF_q and determine exactly the complete weight enumerator of their Gray images under the Gray map. Furthermore, we prove that the Gray images of these linear codes are new infinite families of minimal five-weight linear codes with $w_{min}/w_{max}<(p-1)/p$.