Homogeneous Weight Enumerators

Jay A. Wood

Western Michigan University, Kalamazoo, MI, USA

Abstract

The homogeneous weight is defined for any finite ring with 1. We examine the homogeneous weight enumerator for linear codes defined over the ring $\mathbb{Z}/m\mathbb{Z}$. For values of $m > 5$ that are not prime, there exist linear codes whose homogeneous weight enumerators are equal, yet the homogeneous weight enumerators of their dual codes are different. This implies that the MacWilliams identities do not hold for the homogeneous weight enumerator for those values of m.

Keywords

Homogeneous weight, MacWilliams identities