

环 $F_{\rho^k m} + uF_{\rho^k m}$ 上长为 ρ^k 的循环码计数

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Mass Formulas for Cyclic Codes of Length ρ^k over the Ring $F_{\rho^k m} + uF_{\rho^k m}$

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摘要 环 $R = F_{\rho^k m} + uF_{\rho^k m}$ 上长为 ρ^k 的循环码可看作 $R[x]/\langle x^{\rho^k} - 1 \rangle$ 上的理想。该文通过对 $R[x]/\langle x^{\rho^k} - 1 \rangle$ 上理想的研究, 得到了环 $F_{\rho^k m} + uF_{\rho^k m}$ 上长为 ρ^k 的循环码的唯一表示方法和计数, 并给出了该环上长为 ρ^k 的循环自对偶码的结构和计数。

关键词: 循环码 自对偶码 零化子

Abstract: Cyclic codes over the ring $R = F_{\rho^k m} + uF_{\rho^k m}$ can be seen as the ideals of $R[x]/\langle x^{\rho^k} - 1 \rangle$. Based on the studying of ideals of $R[x]/\langle x^{\rho^k} - 1 \rangle$, a unique method of representing cyclic codes of length ρ^k and their mass formulas over the ring $F_{\rho^k m} + uF_{\rho^k m}$ are provided. For the cyclic self-dual codes of length ρ^k over the ring $F_{\rho^k m} + uF_{\rho^k m}$, their structures and mass formulas are given.

Keywords: Cyclic codes Self-dual codes Annihilator

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