

Two families of optimal ternary cyclic codes with two zeros

Jinmei Fan¹

¹Guilin University of Technology

April 25, 2022

Abstract

Cyclic code is an interesting topic in coding theory and communication systems. In this paper, two families of optimal ternary cyclic codes with parameters $[3^m-1, 3^m-2m-1, 4]$ are presented. The first family of cyclic codes with two zeros π and π^v is constructed by using multivariate method. The second family of cyclic codes with two zeros π^2 and π^v is obtained by analyzing irreducible factors of certain polynomials with finite degrees over the finite field $\mathbb{F}_{3^m}$, where π is a generator of $\mathbb{F}_{3^m}^*$.

Hosted file

Two families of optimal ternary cyclic codes with two zeros.pdf available at <https://authorea.com/users/391259/articles/566671-two-families-of-optimal-ternary-cyclic-codes-with-two-zeros>