

Some Characterizations of Completely Normal Bases of Finite Field

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Abstract

In this paper, the degree of finite extension L over field K , Galois group of L over K , conjugate of ω in a finite field F_{q^n} , normal basis, normal basis generator and completely normal are first defined. And then, it is proved that there exists an element $\omega \in F_{q^n}$ which is completely normal over F_q , and such that $tr(\omega) = v$ if and only if $tr(\omega) = v \in F_{q^k}$ is completely normal over F_q , where F_q is a finite field of q elements and $k \geq 1$ is division of n .

Key words: the degree of finite extension, normal bases generator and completely normal.

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