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## Golomb Costas序列的结构及其在OFDM系统中的应用

### Constructions of Golomb Costas arrays and their applications in OFDM systems

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中文关键词: [Golomb Costas序列](#) [互相关函数](#) [循环移位](#) [正交频分复用](#) [跳频图样](#)

英文关键词: [Golomb Costas arrays](#) [cross-correlation function](#) [cyclic shift](#) [orthogonal frequency division multiplexing](#) [frequency hopping patterns](#)

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中文摘要:

研究了用循环移位法获得的Golomb Costas序列族的特性, 建立了含有一个间隙行和一个间隙列的Golomb Costas序列的结构理论, 深入研究了含有一个间隙行和一个间隙列的Golomb Costas序列的代数结构、构造方法和自(互)相关特性, 并证明了相关的定理。探索了用含有一个间隙行和一个间隙列的Golomb Costas序列设计OFDM系统中跳频图样的方法, 举例说明了如何设计跳频码和怎样将跳频码分配给OFDM系统中的用户。用含有一个间隙行和一个间隙列的Golomb Costas序列设计跳频码能获得理想的自相关特性, 并且当无线通信系统中多普勒频移受限时能获得最佳的互相关性能。

英文摘要:

Theory of structures of Golomb Costas arrays with 1-gap row and 1-gap column was established with the study of the properties and mathematical models of Golomb Costas arrays and their families which are obtained by the cyclic shift method. By conducting a number of researches on the algebraic constructions and the auto- and cross-correlation properties of Golomb Costas arrays with 1-gap row and 1-gap column, certain theorems were confirmed. The design of frequency hopping codes and the distribution of them to the users were illustrated while the design of frequency hopping patterns was explored in OFDM system with Golomb Costas arrays with 1-gap row and 1-gap column. By designing frequency hopping codes with Golomb Costas arrays with 1-gap row and 1-gap column, an algebraically constructed frequency hop code family can achieve ideal auto-correlation properties. And excellent cross-correlation performance can be obtained when the Doppler shifts are restricted in a wireless communication system.

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