

Claims

1. A method for wireless communication, comprising:
transmitting information to a wireless communication node based on a target sequence, wherein the target sequence is a member of a target sequence set, wherein each target sequence of the target sequence set corresponds to a sequence of an individual sequence group, and wherein the target sequence and the sequence of the individual sequence group have a degree of correlation with each other.
2. The method of claim 1, wherein each target sequence of the target sequence set is a length-12 sequence.
3. The method of claim 2, wherein each length-12 sequence corresponds to a mathematical form of: $e^{j\pi\phi(n)/4}, n = 0,1,2,\dots,11$.
4. The method of claim 1, wherein the sequence of the individual sequence group is a length-X sequence, wherein $X = 12N$ and N is an integer larger than 0.
5. The method of claim 4, wherein the length-X sequence is a length-24 sequence that corresponds to a mathematical form of: $e^{j\pi\phi(n)/4}, n = 0,1,2,\dots,24$.
6. The method of claim 4, wherein the length-X sequence is a length-36 sequence that corresponds to a mathematical form of:

$$\bar{r}_{u,v}(n) = x_q(n \bmod N_{ZC}^{RS}),$$

wherein the q^{th} root Zadoff-Chu sequence is defined by:

$$x_q(m) = e^{-j\frac{\pi qm(m+1)}{N_{ZC}^{RS}}},$$

wherein q is given by:

$$q = \lfloor \bar{q} + 1/2 \rfloor + v \cdot (-1)^{\lfloor 2\bar{q} \rfloor}$$

$$\bar{q} = N_{\text{ZC}}^{\text{RS}} \cdot (u + 1)/31, \text{ and}$$

wherein the length $N_{\text{ZC}}^{\text{RS}}$ of the Zadoff-Chu sequence is given by the largest prime number such that $N_{\text{ZC}}^{\text{RS}} < M_{\text{sc}}^{\text{RS}}$.

7. The method of claim 1, wherein a group index is denoted as u , and wherein the length-12 target sequence corresponds to at least one of:

$$\varphi(n) = [3 \ -1 \ -3 \ 3 \ -3 \ -1 \ 3 \ 3 \ 3 \ -3 \ -1 \ -3] \text{ with } u = 23,$$

$$\varphi(n) = [1 \ -1 \ 3 \ -1 \ -1 \ -1 \ -3 \ -1 \ 1 \ 1 \ 1 \ -3] \text{ with } u = 6,$$

$$\varphi(n) = [-1 \ -1 \ -1 \ -1 \ 1 \ -3 \ -1 \ 3 \ 3 \ -1 \ -3 \ 1] \text{ with } u = 16,$$

$$\varphi(n) = [-3 \ -3 \ 3 \ 3 \ 3 \ -3 \ -1 \ 1 \ -3 \ 3 \ 1 \ -3] \text{ with } u = 27,$$

$$\varphi(n) = [-3 \ 3 \ 1 \ -3 \ 1 \ 3 \ -1 \ -1 \ 1 \ 3 \ 3 \ 3] \text{ with } u = 1,$$

$$\varphi(n) = [-3 \ 3 \ 3 \ 1 \ -3 \ 3 \ -1 \ 1 \ 3 \ -3 \ 3 \ -3] \text{ with } u = 2,$$

$$\varphi(n) = [-3 \ 1 \ 3 \ -1 \ -1 \ -3 \ -3 \ -1 \ -1 \ 3 \ 1 \ -3] \text{ with } u = 15,$$

$$\varphi(n) = [-3 \ 1 \ -1 \ -1 \ 3 \ 3 \ -3 \ -1 \ -1 \ -3 \ -1 \ -3] \text{ with } u = 11, \text{ or}$$

$$\varphi(n) = [1 \ 3 \ -3 \ 1 \ 3 \ 3 \ 3 \ 1 \ -1 \ 1 \ -1 \ 3] \text{ with } u = 14.$$

8. An apparatus for wireless communication, comprising a memory and a processor, wherein the processor is configured to read code from the memory and transmit information to a wireless communication node based on a target sequence, wherein the target sequence is a member of a target sequence set, wherein each target sequence of the target sequence set corresponds to a sequence of an individual sequence group, and wherein the target sequence and the sequence of the individual sequence group have a degree of correlation with each other.

9. The apparatus of claim 8, wherein each target sequence of the target sequence set is a length-12 sequence.

10. The apparatus of claim 9, wherein each length-12 sequence corresponds to a mathematical form of: $e^{j\pi\phi(n)/4}, n = 0,1,2,\dots,11$.

11. The apparatus of claim 8, wherein the sequence of the individual sequence group is a length-X sequence, wherein $X = 12N$ and N is an integer larger than 0.

12. The apparatus of claim 11, wherein the length-X sequence is a length-24 sequence that corresponds to a mathematical form of: $e^{j\pi\phi(n)/4}, n = 0,1,2,\dots,24$.

13. The apparatus of claim 11, wherein the length-X sequence is a length-36 sequence that corresponds to a mathematical form of:

$$\tilde{r}_{u,v}(n) = x_q(n \bmod N_{ZC}^{RS}),$$

wherein the q^{th} root Zadoff-Chu sequence is defined by:

$$x_q(m) = e^{-j\frac{\pi qm(m+1)}{N_{ZC}^{RS}}},$$

wherein q is given by:

$$q = [\bar{q} + 1/2] + v \cdot (-1)^{\lfloor 2\bar{q} \rfloor}$$

$$\bar{q} = N_{ZC}^{RS} \cdot (u + 1)/31, \text{ and}$$

wherein the length N_{ZC}^{RS} of the Zadoff-Chu sequence is given by the largest prime number such that $N_{ZC}^{RS} < M_{sc}^{RS}$.

14. The apparatus of claim 8, wherein a group index is denoted as u , and wherein the length-12 target sequence corresponds to at least one of:

$$\varphi(n) = [3 \ -1 \ -3 \ 3 \ -3 \ -1 \ 3 \ 3 \ 3 \ -3 \ -1 \ -3] \text{ with } u = 23,$$

$$\varphi(n) = [1 \ -1 \ 3 \ -1 \ -1 \ -1 \ -3 \ -1 \ 1 \ 1 \ 1 \ -3] \text{ with } u = 6,$$

$$\varphi(n) = [-1 \ -1 \ -1 \ -1 \ 1 \ -3 \ -1 \ 3 \ 3 \ -1 \ -3 \ 1] \text{ with } u = 16,$$

$$\varphi(n) = [-3 \ -3 \ 3 \ 3 \ 3 \ -3 \ -1 \ 1 \ -3 \ 3 \ 1 \ -3] \text{ with } u = 27,$$

$$\varphi(n) = [-3 \ 3 \ 1 \ -3 \ 1 \ 3 \ -1 \ -1 \ 1 \ 3 \ 3 \ 3] \text{ with } u = 1,$$

$$\varphi(n) = [-3 \ 3 \ 3 \ 1 \ -3 \ 3 \ -1 \ 1 \ 3 \ -3 \ 3 \ -3] \text{ with } u = 2,$$

$$\varphi(n) = [-3 \ 1 \ 3 \ -1 \ -1 \ -3 \ -3 \ -1 \ -1 \ 3 \ 1 \ -3] \text{ with } u = 15,$$

$$\varphi(n) = [-3 \ 1 \ -1 \ -1 \ 3 \ 3 \ -3 \ -1 \ -1 \ -3 \ -1 \ -3] \text{ with } u = 11, \text{ or}$$

$$\varphi(n) = [1 \ 3 \ -3 \ 1 \ 3 \ 3 \ 3 \ 1 \ -1 \ 1 \ -1 \ 3] \text{ with } u = 14.$$

15. A computer readable program storage medium having code stored thereon, the code, when executed by a processor, causing the processor to implement a method recited in any of claims 1 to 7.