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(54) Title: SELECTION OF ROOT INDICES IN POLYPHASE CAZAC SEQUENCES

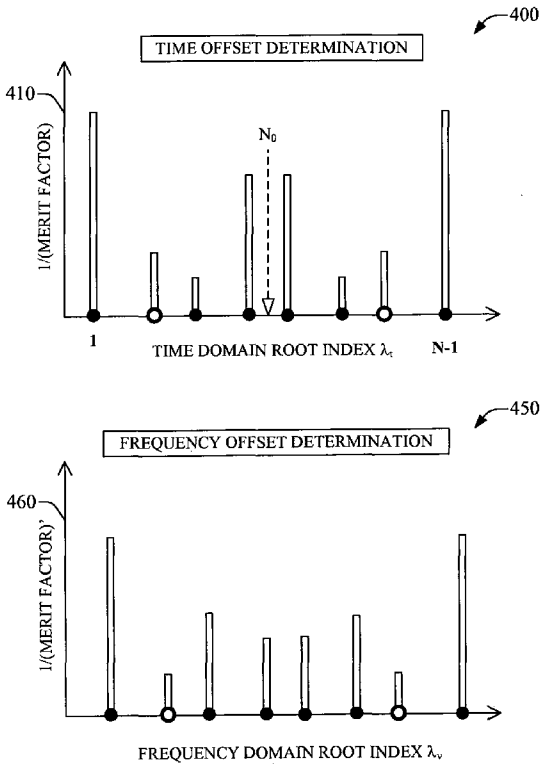


FIG. 4

(57) Abstract: Devices and methods are provided to generate a set of synchronization channel sequences that are robust with respect to systematic errors of time offsets and provide optimal frequency offset estimation. A set of root indices of Zadoff-Chu sequences that optimize a performance metric or merit factor in a first domain (e.g time domain) and in a reciprocal domain (e.g. frequency domain) are identified. Optimal indices satisfy a centro-symmetric relationship with respect to half-value of sequence length: When *e* is an optimal index, N-*e* is also ah optimal root index, For sequences of length $Q^2 = N$, a base sequence generated with an optimal sequence can be utilized to generate at least two other further optimal sequences through sign-flip, conjugation, and periodic modulation operations. Base sequences can be assigned to different sectors of a base station.

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