

SPREADING SEQUENCE DESIGN FOR RELAY NETWORKS

COMBATING THE PROBLEMS OF SIGNAL FADING



TECHNOLOGY FIELD

Communication Systems

IP PROTECTION

Patent No. US 9,954,574 B2

RESEARCHER



Dr. Hyuck Kwon is a professor at Wichita State University with an exceedingly accomplished background in communication systems. Currently, Dr. Hyuck Kwon has 11 patented technologies in the field of communication systems. His research lab has been awarded over 3 million dollars in funding with cooperative partners such as NASA, U.S. Air Force, and Asian Office of Aerospace.

➡ For wireless communication systems, when the generated signal has a data rate beyond long-term evolution (LTE), the systems' signal will experience multipath fading due to interceptors like buildings or geographical features. If the possibility of multipath fading is not considered and addressed properly for each signal generation, the resulting signal is weakened by phase shifts from the different wavelength paths.

ADVANTAGES

To combat the problems of signal fading, this technique for communication security is to generate patterns of noise which disguises the signal from interceptors, but can still be decrypted at the receiver unit.

This technology presents a fully connected uplink and downlink relay network system that uses pseudonoise spreading and despreading sequences, which maximizes the signal-to-noise ratio. The network systems comprises one or more transmitting units, relays, and receiving units. The computer encodes and decodes communication signals with respect to the optimum pseudonoise spreading sequences. The optimized pseudonoise sequence cancels out the majority of interference, resulting in the clearest signal possible.

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Revised: 8/12/2019



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