Secure key distribution based on meteor burst communications

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Abstract

The paper discusses possibility of secure encryption keys distribution based on stochastic properties of meteor burst radio propagation. Unlike wireless key distribution, this method provides much greater channel length and key distribution distances, which is up to 2000 km. Another important advantage is an ability of meteor burst communications to operate in severe climate, under conditions of polar and other remote areas. The paper also considers various physical factors ensuring stochastic variations in characteristics of received radio signal, which are applicable for the secret key generation. The simulation results revealing the most important randomizing factors within meteor burst channel are presented.

Keywords

Channel reciprocity, Common randomness, Encryption keys distribution, Meteor burst radio propagation, Randomizing factor, Randomness of carrier phase, Randomness of propagation time