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**Secure Communication with a Chaotic System owning Logic Element**

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**Abstract**

In recent years, various chaotic systems have been introduced in literature to be used in different branches of science. In the field of secure chaotic communication, more complex chaotic systems are proposed, such as high dimensional (4D, 5D), multi-scroll, surface equilibrium point, to enhance communication security level. In this study, a chaotic system owning logic element is used for increasing the level of security of chaotic communication system, which has not been previously implemented for this purpose in the literature. The used chaotic system includes signum functions, maximum function and absolute operation term. Also, there are analog devices and digital device in the electronic circuit of this chaotic system. These properties increase the complexity of the chaotic system and the security level. Sliding mode control method is preferred for the synchronization part of the secure communication. In this regard, numerical analysis and electronic circuit design of the secure

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