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New Design of Secure Communication System Based on Dynamic Linear Receiver

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Abstract: In this paper, the design issues of the chaotic secure communication system will be scientifically explored. Based on time-domain analysis, a new secure communication system with dynamic linear receivers will be constructed. This secure communication system can not only make the error signal close to zero, but also can correctly calculate its exponential convergence rate. Finally, several numerical simulation results are proposed to illustrate the practicability and correctness of the main results.

Keywords: Secure communication system, Dynamic linear receiver, Moore-Spiegel chaotic oscillator, Exponential convergence rate

REFERENCES

- [1]. S.A. Gebereselassie and B.K. Roy, "A new secure speech communication scheme based on hyperchaotic masking and modulation," IFAC, vol. 55, no. 1, pp. 914-919, 2022.
- [2]. Y.J. Sun, C.M. Chuang, and T.C. Chang, "Design of chaotic secure communication system based on laser dynamic model," International Journal of Trend in Scientific Research and Development, Vol. 6, No. 7, pp. 370-373, 2022.
- [3]. K. Babanli and R.O. Kabaoğlu, "Fuzzy modeling of desired chaotic behavior in secure communication systems," Information Sciences, vol. 594, pp. 217-232, 2022.
- [4]. Y.J. Sun, "New design architecture of chaotic secure communication system combined with linear receiver," International Journal of Trend in Scientific Research and Development, vol. 5, no. 1, pp. 1394-1396, 2020.
- [5]. F. Zhu, F. Wang, and L. Ye, "Artificial switched chaotic system used as transmitter in chaos-based secure communication," Journal of the Franklin Institute, vol. 357, no. 15, pp. 10997-11020, 2020.
- [6]. Y.J. Sun, "A novel design of secure communication system with linear receiver," Journal of Multidisciplinary Engineering Sciences and Technology, vol. 4, no. 10, pp. 8451-8453, 2017.
- [7]. C. Zhao, X. Liu, and Q. Zhong, "Secure consensus of multi-agent systems with redundant signal and communication interference via distributed dynamic event-triggered control," ISA Transactions, vol. 112, pp. 89-98, 2020.
- [8]. Y.J. Sun, "A novel design architecture of secure communication system with reduced-order linear receiver," International Journal of Trend in Scientific Research and Development, vol. 3, no. 1, pp. 1154-1157, 2018.