

Synchronization Phenomena in Chaotic Circuits Coupled by Memristors

Kana Kobayashi¹, Yasuteru Hosokawa¹ and Yoshifumi Nishio²

¹ Shikoku University
Furukawa, Ohjin-cho, Tokushima, 771-1192 Japan
Phone:+81-88-665-1300
E-mail: kana.kobayashi0609@gmail.com,
hosokawa@keiei.shikoku-u.ac.jp

Tokushima University
2-1 Minami-Josanjima, Tokushima, 770-8506 Japan
Phone:+81-88-656-7470 FAX:+81-88-656-7470
E-mail: nishio@ee.tokushima-u.ac.jp

Abstract

Many systems using memristor have been proposed and investigated by many researchers. One of them is an investigation of chaotic circuits coupled by two memristors in antiparallel [1]. Especially, they paid attention to variables of memristors. It was revealed that memristors can be used as a coupling element in adaptive strategies for consensus and synchronization.

On the other hand, switching phenomenon of switching a synchronization state and an asynchronization state is observed in coupled chaotic circuits including small parameter mismatches.

In this study, synchronization phenomena in chaotic circuits coupled by memristors as shown in Fig. circuit are investigated. Especially, in case of including small parameter mismatches, a relationship between small parameter mismatches and a synchronization state is investigated.

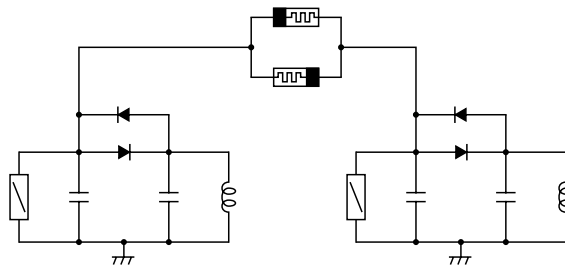


Figure 1: Chaotic Circuits Coupled by Two Memristors in Antiparallel.

References

- [1] Lucia Valentina Gambuzza, Arturo Buscarino, Member, IEEE, Luigi Fortuna, *IEEE Trans. CAS-I*, vol. 62, no. 4, pp. 1175-1184, 2015