

# Synchronization Phenomena in Coupled System of Chaotic Circuits with LC Resonators

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## SUMMARY

In coupled chaotic circuits, many interesting phenomena, for instance, chaotic synchronization phenomena, intermittency chaos, spatio-temporal chaos and so on are observed. Therefore, there are many studies about coupled chaotic circuits. In almost these studies, some of famous chaotic circuits have been applied. One of famous chaotic circuits is Shinriki-Mori circuit [1] [2]. There are many investigation of coupled chaotic circuits using Shinriki-Mori circuit [3] [4].

In our previous study, a modified Shinriki-Mori circuit [5] has been proposed. Shinriki-Mori circuit consists of a LC resonator, by-directional diodes and the others. In the proposed circuit, a LC resonator and by-directional diodes included in the original circuit are copied and added to the original circuit. By applying different parameters of LC resonators, two similar chaotic waveforms which are observed as voltages of LC resonators are obtained. Additionally, these waveforms are influenced by changing circuit parameters.

In this study, two modified Shinriki-Mori circuits coupled by a resistor is investigated. Figure 1 shows the modified Shinriki-Mori circuit. Especially, relationships among LC resonators are paid attention. Figure 2 shows one of computer simulation result. In this result, the synchronous rate of Circuit-A are decreasing by increasing the coupling strength. On the other hand, the synchronous rate of Circuit-B are increasing by increasing the coupling strength.

In the future works, three modified Shinriki-Mori circuits coupled by resistors will be investigated. In addition, we will investigate in linear coupling system and ring coupling system of three modified Shinriki-Mori circuits coupled by resistors.

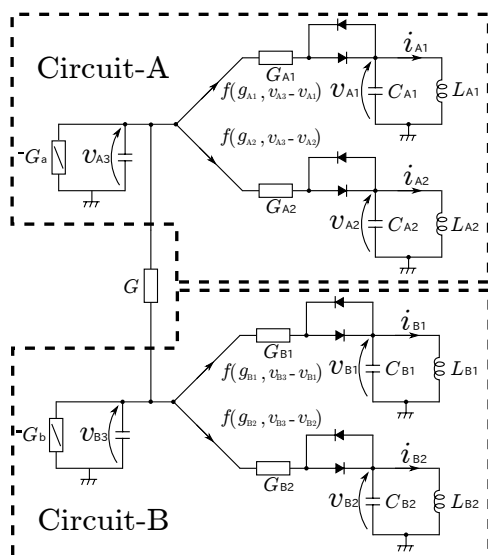


Figure 1. Modified Shinriki-Mori circuit.

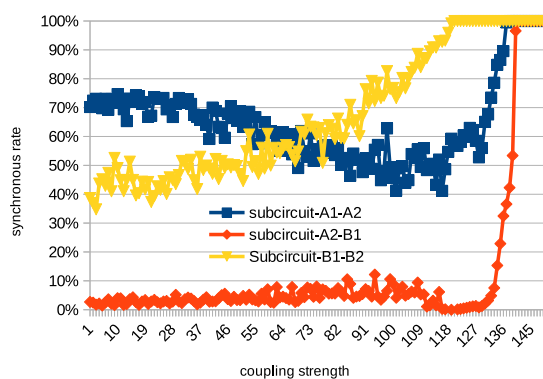


Figure 2. Synchronous rate of Circuit-A and Circuit-B.

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