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A Study on Oscillation Frequency in the Coupled Chaotic Circuit

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SUMMARY

The synchronous phenomena are observed as not only field of natural science but also various fields. For example, we can confirm the flashing of fireflies (a firefly is able to match frequency of other fireflies), metronome, heartbeat of the human, and so on. The synchronous phenomena have been researched extensively in physics [1] and biology [2]. In addition, applying synchronous phenomenon to medical technology is developed. For the future engineering application, we consider it is important to investigate synchronous phenomena of coupled chaotic circuit.

Generally, phase difference is used to define synchronous state. Oscillation frequency is not focused when the coupled chaotic circuit synchronous. In our study, we focus on move of oscillation frequency. Chaotic attractor has own oscillation frequency. Oscillation frequency changes in proportion to synchronous state. We consider that oscillation frequency becomes closer to steady value when synchronous state becomes synchronization. As a result, we confirmed interested characteristic of oscillation frequency when synchronous state is changed from asynchronous into synchronization.

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