

Fig. 1 Chaotic circuit

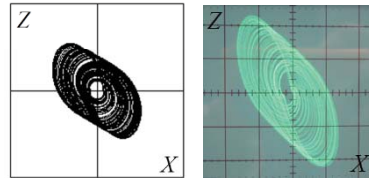


Fig. 2 Chaotic attractor

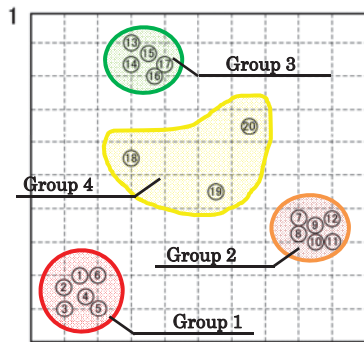


Fig. 3 Clustering result

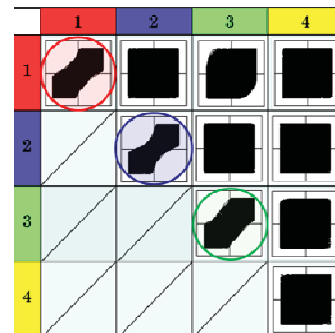


Fig. 4 Synchronization

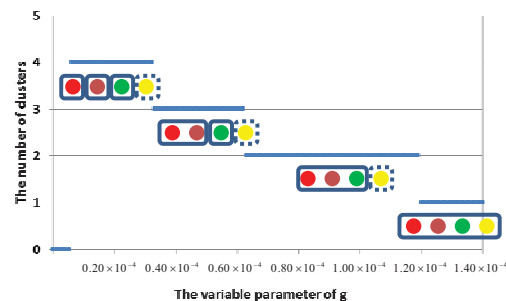


Fig. 5 Clustering phenomena with coupling strength

## Content:

Coupled oscillatory systems are good models to express essential role of high-dimensional nonlinear phenomena occurring in the field of natural sciences. Recently, many studies have been investigated synchronization of chaotic circuits. It is applied in the field of engineering, physics and biology and so on.

In this study, we apply coupled oscillatory systems to modeling of social network using chaotic circuit (Fig. 1, 2). The chaotic circuits are placed on 2-dimensional space and are coupled with the distance information. By using computer simulations and circuit experiments, we obtain clustering result as shown in Fig. 3. Figure 4 shows the synchronization phenomena between the groups. Furthermore, we confirm that the number of clustering changes when the coupling strength is changed (Fig. 5).

In our future works, we would like to apply the proposed system for more complex social network by using different frequency of oscillators.

Keywords: coupled oscillators, synchronization, clustering

E-mail: uwate@ee.tokushima-u.ac.jp

Tel. 088-656-7662

Fax: 088-656-7471

HP : <http://nlab.ee.tokushima-u.ac.jp/uwate.htm>

