



# Analysis of Synchronization Phenomena with Frustration Networks

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## SUMMARY

There are a lot of synchronization phenomena in this world. This is one of the nonlinear phenomena that we can often observe by natural animate beings which do collective actions. For example, firefly luminescence, cry of birds and frogs, applause of many people, and so on. Synchronization phenomena have a feature that the set of small power can produce very big power by synchronizing at a time. Therefore, study of synchronization phenomena has been widely reported not only in the engineering but also the physical and the biological fields. Investigation of coupled oscillators is focused on many researchers, because coupled oscillatory network produces interesting synchronization phenomena, such as the phase propagation wave, clustering, and complex patterns. In addition, it has the advantage of being able to manufacture for circuit on the board[1], [2], [3].

In this study, we investigate synchronization phenomena observed in the system model containing a ring and a star of van der Pol oscillators by circuit experiment and computer simulation. We observe several types of synchronization phenomena by increasing the coupling strength of the ring. Then, we observe the synchronization phenomena with computer simulation.

## REFERENCES

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