

KORI, Hiroshi

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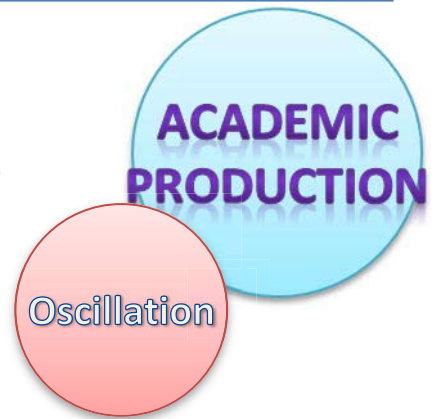
■ Researcher information

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Major

Mathematical physics, Theoretical biology, Nonlinear science



■ Research topics

Synchronization in biological rhythms

Keywords

Oscillations, biological rhythms, synchronization, networks, control

Contents

■ Overview

Dynamical order appears in rhythmic elements when they interact each other. Such behavior is called synchronization, which is of great importance in fields ranging from Engineering to Medical Science. In particular, synchronization underlies in the formation of biological functions, such as the circadian rhythms and the heartbeats. In this research project, together with researchers of various disciplines, we shall tackle issues related to synchronization through constructing mathematical models. We also try to control experimentally circadian rhythms of biological organisms.

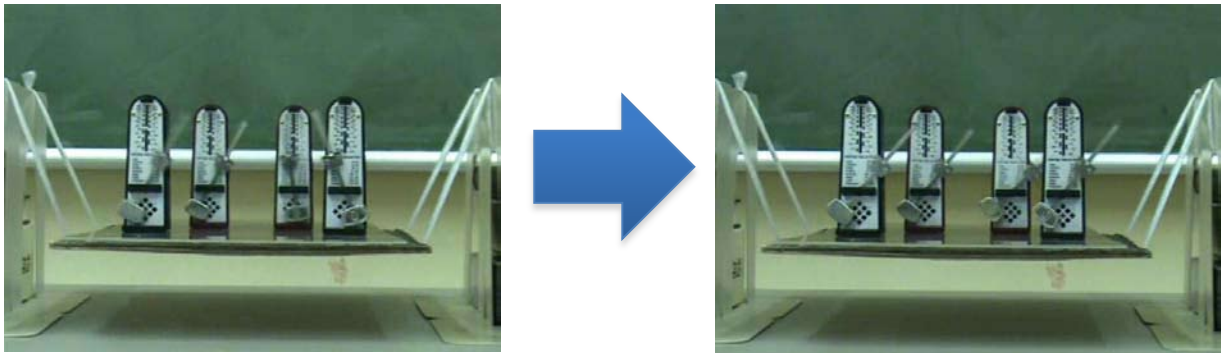


Photo: Metronomes on a "bridge".

These four metronomes are tuned slightly differently. Therefore, if they are on a desk, they behave independently and do not show any ordered dynamics. However, on a "bridge", they interact through swing and eventually synchronize in phase.

Intellectual properties (Patents, computer programs), productization, publications and social/industrial contributions

- Book "Dynamical System Approach to Biological Rhythms", Kyoritsu-syuppan (2011) (in Japanese)
- Various outreach activities including open seminars (Okayama, Kobe), science café (Sapporo, Tokyo), special lectures in junior and high schools (Sapporo, Amagasaki), TV broadcast (NHK education), organization of science events (Ochanomizu elementary school), etc.

Potential of social/industrial contribution

- Joint research/ licensing / technical consulting / knowledge sharing (open courses, workshops, publications)
- I would like to teach school children about the fun of science and the importance of mathematics.
- I can undertake a lecturer at open seminars.