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random 등에 따른 과도한 전파 양상을 위해 연구하였으며, 특히 나선 모양의 부채에 대한 실험 보였다. 또한, 요소들간에 시간 지연이 있는 경우의 효과도 보았다.

**F-P030**

On the coupled chaotic bistable systems  
Hwa-Kyun Park, H.T Moon  
The dynamics of coupled chaotic bistable systems including multiple saddle points are studied. Size instability destroys the synchronization and the domain structure form spontaneously. We find that each domains show two types of behavior: the amplitude death and unsteady motion near the saddle points due to multiple time scales of local dynamics. The statistical natures of domain length are studied and explained using space mapping approach. The results are tested for many chaotic bistable systems such as Lorenz, Chua, and Duffing oscillators.

**F-P031**

Dynamical Temperature in momentum-conserved Hamiltonian Mean field systems  
정재윤, 문희태(KAIST)  
We present a dynamical approach for measuring the temperature of a momentum-conserved Hamiltonian systems in the microcanonical ensemble of thermodynamics. In particular, we study the temperature of a Hamiltonian mean field system, which is a system of $N$ fully coupled classical particles and shows a second order phase transition. And we study if the new-defined temperature can be a good thermodynamic variable in a system with a finite degree of freedom.

**F-P032**

Sandpiles on the small world network  
조한현, 문희태(KAIST)  
고생물의 학에서 관찰되는 생물종 수의 변화, 논리적 등의 학자들에 의해 개발된 자전 규모, 모래를 쌓을 때 관찰되는 사태(avalanche) 등을 이해할 수 있는 도구로서의 SOC(self-organized criticality)가 연구되어 왔다.

또한 regular lattice와 random graphs의 중간 형태인 small world network가 제한된 이후 이 연결점을 통성적으로 이해하기 위한 연구가 이루어지고 있다. 우리는 small world network의 모래쌓기(sandpile)를 컴퓨터로 시뮬레이션을 돕기 좋은 모래를 치켜내고 한다.

**F-P033**

Experimental observation of synchronization of in-phase orbits in unidirectionally coupled diode resonator  
김영태, 김영준, 이원경( 아주대학교), 김상윤(강원대학교)  
Two identical diode resonators are unidirectionally coupled for studying synchronization of in-phase orbits. Diode resonator is a well-known circuit for demonstrating chaos as well as various periodic motions by varying a control parameter. Coupling strength of the coupled circuits could be changed using a feedback amplifier. Periodic orbits of the response system became successively in-phase synchronized with those of the drive system as coupling strength is increased at the fixed control parameter. Experimental results seem to follow the theoretical results on synchronization of dissipatively coupled one-dimensional quadratic maps. Furthermore, we had observed chaos synchronization above the critical control parameter. Such in-phase synchronization showed a hysteresis depending on the sweeping direction of the coupling constant, which was not expected in theoretical study of the coupled maps. In addition, fine structures of synchronization are different from theoretical results from the coupled maps.

**F-P034**

Global Effects of The Riddling Bifurcations in Coupled Chaotic Systems  
김우정, 김상윤(강원대)  
We consider riddling bifurcations in coupled chaotic systems with invariant subspaces. Through a riddling bifurcation, a first period saddle, embedded in the chaotic attractor on an invariant subspace, becomes transversely unstable, and then the chaotic attractor loses its asymptotic