

# International Seminar (German-Japanese Mini-Workshop)

February 21-22, 2013

## Seminar 1. 15:00-16:00 (February 21)

Physical Properties of Magnetic Gels:

Prof. Helmut Brand (Bayreuth University, Germany)

## Seminar 2. 16:00-17:00(February 21)

Chaotic convection in a ferro fluid:

Prof. Harald Pleiner (Max Planck Institute for Polymer Research, Germany)

Abstract: We report theoretical and numerical results on thermally driven convection of a magnetic suspension. The magnetic properties can be modeled as those of electrically non-conducting super paramagnets. We perform a truncated Galerkin expansion finding that the system can be described by a generalized Lorenz model. We characterize the dynamical system using different criteria such as Fourier power spectrum, bifurcation diagrams and Lyapunov exponents. We find that the system exhibits multiple transitions between regular and chaotic behaviors in the parameter space. Transient chaotic behavior in time can already be found slightly below the linear instability threshold of the stationary state.

### 1. February 21 (Thursday) : Seminar Session

**15:00-16:00 Seminar 1. by Prof. Helmut Brand**

**16:00-17:00 Seminar 2. by Prof. Harald Pleiner**

18:15-20:00 a dinner meeting (in a Japanese restraint) **with Shoichi**

### 2. February 22 (Friday)

9:30-10:30 An official work

10:00-11:30 Excursion to Tokiwa park close to our Tokiwa campus.

If the weather is not fine, we can start discussion.

11:45-13:00 A lunch time (in a restraint)

13:15- 14:45 A meeting to discuss a detailed plan of **the symposium for**

**Shoichi.**