



# Meiji University Global COE Program 25<sup>th</sup> Mathematical Sciences based on



## Modeling, Analysis and Simulation seminar

Date: June 10, 2010, 16:30~18:00

Location: Meiji Univ. Ikuta Campus, Build 2 Annex A, Room A207

**Hiroshi Kori** (Ochanomizu Univ.)

**Title :** Issues on coupled oscillator networks: feedback engineering of synchronization and dependence of temporal precision on network structure

**Abstract :** In nature, there are many situations in which a population of oscillators forms a collective oscillation. Understanding dynamical properties of oscillator networks is an important issue because of their broad applications in disciplines ranging from biology to engineering. In this presentation, I will first review synchronization. In particular, useful mathematical models, called phase models, will be briefly explained. Then, I will talk about a few issues from my recent works.

Reference:

- [1] I. Z. Kiss, C. G. Rusin, H. Kori, J. L. Hudson, "Engineering Complex Dynamical Structures: Sequential Patterns and Desynchronization", *Science* 316, 1886-1889 (2007)
- [2] Y. Kobayashi and H. Kori, "Design principle of multi-cluster and desynchronized states in oscillatory media via nonlinear global feedback ", *New Journal Physics* 11, 033018 (2009)
- [3] N. Masuda, Y. Kawamura, H. Kori: "Collective fluctuations in networks of noisy components", arXiv/0911.5013

**Everyone is welcome to attend the MAS seminar.**

Meiji institute for Advanced Study of Mathematical Science (<http://www.mims.meiji.ac.jp>)  
(Organizers: M. Mimura, D. Ueyama, Y. Wakano, K. Ikeda and S.Kinoshita)

---

MAS seminar is partly supported by Meiji University Global COE program "Formation and Development of Mathematical Sciences Based on Modeling and Analysis" (<http://goe.mims.meiji.ac.jp/>), the Grant-in-Aid for Scientific Research (S), "Mathematical Theory of Nonlinear-Non-equilibrium Reaction-Diffusion Systems" by M. Mimura (<http://nnrds.math.meiji.ac.jp/>).



Access: 10 minutes on foot from Ikuta St. Odakyu line,  
Or 10 minutes by bus No. 13「明治大学正門前」, get off at the last stop.  
See [http://www.meiji.ac.jp/koho/campus\\_guide/](http://www.meiji.ac.jp/koho/campus_guide/) for details.