



# Meiji University Global COE Program

## 13<sup>th</sup> Mathematical Sciences based on Modeling, Analysis and Simulation seminar



Date : July 29, 2009, 16:30~17:30

Location : Meiji Univ. Ikuta Campus, Build 2 Annex A, Room A205

## Daichi Yanagisawa

(Univ. of Tokyo, Research Fellow of JSPS, DC1)

### Title : Research for Evacuation and Pedestrian Queueing Systems

Abstract : In my talk, I briefly summarize microscopic models for pedestrian dynamics and introduce my two research topics. <Evacuation> We have obtained the mathematical formulation for the pedestrian flow, which includes the effect of conflicts and turning. It enables us to verify the specific phenomena for an evacuation theoretically. In the congested evacuation situation, the pedestrian flow decreases when all pedestrians try to evacuate faster and increases when we put an obstacle in front of the exit. <Queueing system> When there are plural service windows, the queueing theory indicates that a fork-type queueing system (M/M/s), which collects people into a single queue, is more efficient than a parallel-type queueing system (M/M/1xs), i.e., queues for each service windows. However, in our new walking-distance introduced queueing theory, we find that the parallel-type queueing system is more efficient when sufficiently many people are waiting in the queues.

**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 and K. Ikeda)

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(<http://gcoe.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.