Meiji University Global COE Program

16th Mathematical Sciences based on Modeling, Analysis and Simulation seminar

Date : November 4, 2009, 16:30～17:30

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

Takashi Nakazawa (Okayama Univ.)

Title : Numerical and mathematical analyses of water-circulator-induced flow in ponds

Abstract : Pollution and muddiness of natural and artificial reservoirs that are used to supply water irrigation have become important problems in recent years. A rotating propeller operating at low speed set on a lake surface is proposed because it is expected that the device can induce vertical circulating flow by the centrifugal force. Although various experiments have shown clearly that the water quality in a lake is improved by operation of such equipment, the flow mechanism is not fully understood. This study is in- tended to characterize vertical circulating flow resulting from the propeller's action. To survey such a fluid motion numerically and mathematically in simple systems, the flow induced by the top boundary condition which forces a horizontal rotating flow is investigated here. Simulations of flows created by the top boundary condition are carried out to obtain steady-state solutions with various Reynolds numbers and to obtain a transition diagram.

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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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/ for details.