Theory of Biomathematics and Its Applications IX

November 13 (Tue.) -- 16 (Fri.), 2012
Research Institute for Mathematical Sciences (Room No. 420),
Chair: Kazunori SATO (Shizuoka University)
Academic Partner: The Japanese Society for Mathematical Biology

Program

November 13 (Tue.)
13:00 Opening Address

Contributed Talks:
13:10--13:30 Hikaru Yoshida (Shizuoka Univ.)
H5N1 epidemics: Is vaccination and prevention policy effective?
13:35--13:55 Hiroki Kawase (Shizuoka Univ.)
Apoptosis model in HIV infection
14:00--14:20 Kenta Saiki (Shizuoka Univ.)
Dendritic cells activation model in HIV infection
14:25--14:45 Hisashi Inaba (Univ. of Tokyo)
On the pandemic threshold theorem of the early Kermack-McKendrick model with individual heterogeneity
<< short break >>
15:05--15:25 Chaifong Noppharat (Chuo Univ.)
Dynamical model of virus replication by 2 type influenza in human epithelial cells
15:30--15:50 Yueping Dong (Shizuoka Univ.)
Mathematical modeling on the role of helper T cells in tumor immune system
15:55--16:15 Shinji Nakaoka (RIKEN RCAI)
Mathematical study on the initiation of skin inflammatory responses
16:20--16:40 Megumi Masuda¹, Akira Sasaki² and Kei Tokita¹ (¹Osaka Univ., ²SOKENDAI)
A mathematical model of molecular mimicry and autoimmune disease
**November 14 (Wed.)**

**Contributed Talks:**
9:30–9:50  Yuki Goshima (Univ. of Tokyo)
A Mathematical model for cancer stem cell, considering staying time in proliferating and quiescent phase

9:55–10:15  Kouji Harada (Toyohashi Univ. of Technology)
A Self-Destruction Dynamics of HIV-1 Quasispecies Population through Actions of a Mutagen

10:20–10:40  Tsuyoshi Hirashima (Kyoto Univ.)
Cellular Potts modeling on collective cell movement with experimental observation using skin cell

10:45–11:05  Narumi Ikuta, Tsuyoshi Mizuguchi (Osaka Pref. Univ.)
Inheriting process on a family tree network

11:10–11:30  Makoto Yomosa¹, Tsuyoshi Mizuguchi¹, Yoshinori Hayakawa² (¹Osaka Pref. Univ., ²Tohoku Univ.)
Structure analysis of hooded gull flocks based on a leader-follower relationship

11:30–13:00  <<Break for Lunch>>

13:00–15:15
**Mini-Symposium “Lyapunov's method and its application”**
Organizer: Tsuyoshi Kajiwara (Okayama Univ.)
Symposiasts:
- Tsuyoshi Kajiwara (Okayama Univ.)
- Toru Sasaki (Okayama Univ.)
- Yoichi Enatsu (Waseda Univ.)
- Toshikazu Kuniya (Univ. of Tokyo)

**Contributed Talks:**
15:30–15:50  Lisa Uechi (Kyoto Univ.)
Stability and restoration phenomena in competitive systems

15:55–16:15  Yusuke Ikegawa (Osaka Pref. Univ.)
Effects of two types of adaptive defense by basal resource on IGP system

16:20–16:40  Ryo Yamaguchi (Kyushu Univ.)
Evolution of premating barriers in interspecific contacts: quantitative genetic modeling
November 15 (Thur.)

Contributed Talks:
9:15-- 9:35  Takuyo Aita (Saitama Univ.)
An interpretation of evolutionary dynamics in \textit{in vitro} molecular evolution from
thermodynamical and informational view point
9:40--10:00  Hiromi Seno (Tohoku Univ.)
A simple mathematical model for the annual variation of epidemic outbreak with prevention
level affected by past incidence sizes

Invited Talk
10:15--11:15  Nanako Shigesada (PRESTO Japan Science and Technology Agency)
Travelling waves of biological invasions in spatially heterogeneous media: effects of diffusion,
advection and population pressure

11:15--12:45  <<Break for Lunch>>

12:45--16:15

Mini-Symposium “Spatial structure in ecology”
Organizer: Kazunori Sato (Shizuoka Univ.)
Symposiasts:
  Toshiyuki Namba (Osaka Pref. Univ.)
  Ichiro Ken Shimatani (Inst. of Statist. Math.)
  Kei Tokita (Osaka Univ.)
  Satoru Morita (Shizuoka Univ.)
  Hiroshi Hakoyama (Fish. Res. Agency)
  Akiko Satake (Hokkaido Univ.)

Contributed Talk:
16:30--16:50  Mitsuo Takase (LINFOPS Inc.)
A automatic control mechanism to ignite the immune system locally against a small cancer
mass considering reliability
November 16 (Fri.)

Contributed Talks:
9:30–9:50  Etsushi Nakaguchi (Tokyo Medical and Dental Univ.)
Distinct particles model of layer process of fibre molecules
9.55–10:15  Isamu Doku (Saitama Univ.)
Finite time extinction of stochastic model for tumour immunity
10:20–10:40  Yasumasa Saisho¹, Atsushi Ito² (¹Hiroshima Univ., ²Tokai Univ.)
Stochastic models of the generation of DNA double-strand breaks
10:45–11:05  Shu-ichi Kinoshita, Keita Tateishi, Mayuko Iwamoto, Nobuhiko J. Suematsu, Daishin Ueyama (MIMS)
Spiral formation in heterogeneous discretized excitable media
11:10–11:30  Mayuko Iwamoto, Daishin Ueyama, Ryo Kobayashi (Meiji Univ.)
The mechanism of crawling locomotion using mucus in gastropod

11:30–13:00  <<Break for Lunch>>

Contributed Talks:
13:00–13:20  Masamichi Sato (Univ. of Tokyo)
Metabolic Flux and Convex Polytope
13:25–13:45  Takeshi Otsu (Shizuoka Univ.)
A simple age structure model in yeast population
13:50–14:10  Nariyuki Nakagiri (Univ. of Hyogo)
Relation between species extinction and space structure of the habitat on the square lattice:
Habitat fragmentation by the habitat destruction
14:15–14:35  Kenta Yashima¹, Sayaki U. Suzuki², Akira Sasaki³ (¹MIMS, ²NARC, ³SOKENDAI)
Application of Fractal reaction theory to population dynamics in heterogeneous environment ·
calculation of basic reproduction ratio ·