

解析セミナー

世話人 川島秀一（九州大・数理）

日時： 2012 年 12 月 11 日（火）15：00 ~ 16：45

場所： 九州大学・数理学研究院 中セミナー室 7
（数理・IMI 図書館棟 3 階）
福岡市西区元岡 744

講演者： Il Hyo Jung 氏 (Pusan National University)

講演題目： Mathematical modeling and its applications

講演者： Hyun-Min Kim 氏 (Pusan National University)

講演題目： Numerical methods for solving nonlinear matrix equations

プログラム

15:00 ~ 15:45 Il Hyo Jung 氏 (Pusan National University)

Mathematical modeling and its applications

16:00 ~ 16:45 Hyun-Min Kim 氏 (Pusan National University)

Numerical methods for solving nonlinear matrix equations

18:30 ~ 懇親会 (天神近辺にて)

このセミナーは QNA セミナーとの合同セミナーとして開催されます。

なお，セミナー講演者の Il Hyo Jung 教授と Hyun-Min Kim 教授による集中講義が，九州大学において 12 月 12 日（水）～ 14 日（金）に行われます。

Il Hyo Jung 氏の講演要旨

The aim of this talk is to introduce a mathematical model in an ecosystem by mathematical modeling and to study a pest management problem using the mathematical model. The pest management problem involves choosing appropriate tactics from a range of pest control techniques including biological, cultural and chemical methods to suit individual systems, pest complexes and local environments. Release of sterile males and spraying of pesticide have been used as control measures for pest population. Sterile insect technique is one of the effective biological control for pests in a system. Using the optimal control theory and mathematical analysis, we show that the proper use of control measures might enhance some production of the model in an economically viable way. This method may be applied to some pest management problems to control pest populations in the other system; malaria and dengue, etc.

Hyun-Min Kim 氏の講演要旨

We consider numerical methods for solving nonlinear matrix equations which are quadratic matrix equations, matrix polynomials and a class of nonlinear matrix equations of the form $X^n - f(X) = 0$, where f is a monotone matrix function defined on the cone of $k \times k$ positive definite real matrices. For solving many different types of nonlinear matrix equations, Newton's method is a very natural approach. We consider here how Newton steps can be applied for solving nonlinear matrix equations. Functional iterations and conjugate gradient methods are also considered. Finally, we show some numerical experiments.