

Seminar in honor of Professor Göran Högnäs

10.00 – 10.10	<i>Opening</i> Paavo Salminen
10.10 – 11.00	<i>Functional responses and how they evolve by natural selection</i> Mats Gyllenberg (University of Helsinki)
11.10 – 11.40	<i>Exit times for past-dependent processes with Gaussian noise</i> Brita Jung
11.45 – 12.10	<i>Coffee</i>
12.10 – 13.00	<i>Longevity risk modeling – a survey</i> Marie-Claire Koissi (Western Illinois University)
13.10 – 14.15	<i>Lunch (Arken)</i>
14.15 – 14.45	<i>Iterated function systems: invariant measures and fractal dimensions</i> Andreas Anckar
14.50 – 15.20	<i>Economic capital allocation</i> Min Wang
15.25 – 15.50	<i>Coffee</i>
15.50 – 16.40	<i>On the Waring distribution, the Glänzel-Schubert model and their applications – a historiette</i> Timo Koski (Royal Institute of Technology)
16.50 – 17.20	<i>Random walks on semigroups, my cooperation with Arunava Mukherjea</i> Göran Högnäs
19.00	<i>Dinner (Hus Lindman)</i>

Abstracts

Mats Gyllenberg: **Functional responses and how they evolve by natural selection**

In predator-prey interactions the functional response is, by definition, the number F of prey eaten by a predator per unit of time. The most well-known functional responses are the Holling type I (or mass action) and type II functional responses. In these cases F is a function of prey density only. Later functional responses depending on both prey and predator densities have been proposed by Beddington, De Angelis, Arditi and others.

The mechanistic derivation of Holling's type II functional response is based on time-budgeting: The predator has to allocate time for searching for and handling (killing, eating digesting, etc.) of prey. On the contrary, functional responses depending on both prey and predator densities have only recently been given mechanistic derivations.

The advantage of mechanistic modelling is that all the parameters in the functional response have biological interpretations in terms of individual behaviour. Therefore these parameters can be viewed as traits that evolve by natural selection.

In this talk I present mechanistic derivations of a few functional responses and investigate how the functional response may evolve by natural selection. The talk is based on joint work with Stefan Geritz.

Marie-Claire Koissi: **Longevity risk modeling – a survey**

In this talk, we will present some of the current developments on longevity risk modeling. We will also survey longevity-linked insurance and pension funds products.

Timo Koski: **On the Waring distribution, the Glänzel-Schubert model and their applications – a historiette**

The Waring distribution is a statistical distribution used for, e.g., describing publication productivity processes. The distribution was originally introduced by H.A. Simon as a generalization of the Yule distribution and further analysed by J.O. Irwin, who gave the distribution its current name. One generative model for the distribution is the immigration-birth-emigration process introduced by W. Glänzel and A. Schubert.

This lecture will present the Glänzel-Schubert model and show some applications to estimating scientific productivity of Swedish universities. We understand this as the estimation of probability of zero from truncated distributions. If time permits, the political aspects of the topic will be touched upon. This is joint work with Ulf Sandström, Index/KTH and Erik Sandström.