The Mathematical Center for Science and Technology
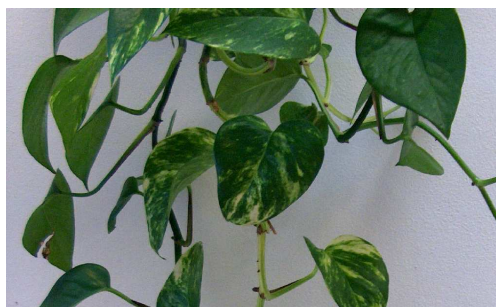## Institute of Mathematics of the Polish Academy of Sciences

invite you to the

SEMINAR

common with the

YOUNG RESEARCHERS COLLOQUIUM

On Friday, 20 May 2016 at 3.00 pm.

at IM PAN, Śniadeckich 8, in room 403

Prof. Piotr Gwiazda (UW and IMPAN)

will give a lecture

Age-structured population model of infectious disease spread applied to data on varicella prevalence in Poland

Dynamics of the infectious disease transmission is often best understood taking into account the structure of population with respect to specific features, in example age or immunity level. Practical utility of such models depends on the appropriate calibration with the observed data. Here, we discuss the Bayesian approach to data assimilation in case of two-state age-structured model. This kind of models are frequently used to describe the disease dynamics (i.e. force of infection) basing on prevalence data collected at several time points. We demonstrate that, in the case when the explicit solution to the model equation is known, accounting for the data collection process in the Bayesian framework allows to obtain an unbiased posterior distribution for the parameters determining the force of infection. We further show analytically and through numerical tests that the posterior distribution of these parameters is stable with respect to cohort approximation (Escalator Boxcar Train) to the solution. Finally, we apply the technique to calibrate the model based on observed sero-prevalence of varicella in Poland.

From 2.30 pm. we invite you to a cup of tea or coffee in room 409.

The Organizers