

# 数学与系统科学研究院

## 计算数学所学术报告

报告人: **Prof. Dr. Anatoly Neyshtadt**

( *Space Research Institute of Russian Academy of Sciences, Russia and  
Department of Mathematical Sciences, Loughborough University, UK* )

报告题目:

**On stability loss delay for dynamical  
bifurcations**

邀请人: 唐贻发 研究员

报告时间: **2015 年 4 月 3 日 (周五)**

**上午 10:00-11:00**

报告地点: 数学院南楼七层

**702 会议室**

## **Abstract:**

Stability loss delay is an interesting, important and not yet completely investigated phenomenon. This phenomenon can be described as follows. In classical bifurcation theory the behaviour of systems, depending on parameter, is considered for values of the parameter close to some critical, bifurcational one. In theory of dynamical bifurcations the parameter is changing slowly in time and passes through a value, which would be bifurcational in the classical static theory. Let at the bifurcational value of the parameter an equilibrium or a limit cycle loses its asymptotic linear stability but remains nondegenerate. It turns out, that in analytic systems the stability loss is inevitably delayed: the phase points remain near the unstable equilibrium (cycle) for a long time after bifurcation; during this time the parameter changes by a quantity of order 1. Such delay is not in general found in non-analytic (even infinitely smooth) systems. In the talk a review on the theory of stability loss delay for dynamical bifurcations will be presented.

## **Short Biography:**

Anatoly Neyshtadt is Leading Research Fellow at Space Research Institute of Russian Academy of Sciences, also Professor of Applied Mathematics in Loughborough University (UK). He received his Ph.D. in Mathematics, Moscow State University in 1976 and Doctor of Sciences (Mathematics), Moscow State University in 1990. His research interests include Applied dynamical systems, perturbation theory, and averaging method. He has published one book and over 100 journal papers in these directions. He was an invited speaker at International Congress of Mathematicians (Kyoto, 1990) and International Congress on Theoretical and Applied Mechanics (Warsaw, 2004). He received Lyapunov Prize of Russian Academy of Sciences (joint with D.V. Anosov, 2001) and Russian State Fellowships for Distinguished Scientists of Russia (1998-2003). He served as co-Editor-in-Chief for “Nonlinearity” during 2005-2014. Currently, he serves as Fellow of the Institute of Physics, Member of Russian National Committee on Theoretical and Applied Mechanics, Member of Advisory Committee of Russian Foundation of Fundamental Research, Editor for “Chaos, An Interdisciplinary Journal of Nonlinear Science” and Member of Editorial Board for “Regular and Chaotic Dynamics”.

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