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 mechanisms of destruction of adiabatic invariance

邀请人： 唐贻发 研究员

报告时间：2015 年 4 月 17 日（周五）

上午 10:00-11:00

报告地点： 数学院科技综合楼

三层 311 报告厅

Abstract:

In many problems of classical mechanics and theoretical physics dynamics can be described as a slow evolution of some periodic or quasi-periodic processes. Adiabatic invariants are approximate conservation laws for such systems. Existence of adiabatic invariants makes dynamics close to regular. Destruction of adiabatic invariance leads to chaotic dynamics. In the talk it is planned to present a review of some mechanisms of destruction of adiabatic invariance. It is planned to consider destruction of adiabatic invariance due to captures into resonances, repulsion from resonances and scattering on resonances, passages through a separatrix, and changes of modes of motion in systems with elastic collisions. It is planned to consider examples of manifestation of these mechanisms in problems related to charged particles dynamics.

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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