深圳北理莫斯科大学
УНИВЕРСИТЕТ МГУ-ППИ В ШЭНЬЧЖЭНЕ
SHENZHEN MSU-BIT UNIVERSITY

北理工-深北莫理论与应用数学交流研讨会

会议时间:2024 年 9 月 21-22 日

地点：深圳北理莫斯科大学主楼 336

主办单位：
北京理工大学数学与统计学院
深圳北理莫斯科大学计算数学与控制系

日程安排

9 月 21 日

9:00-12:00	会议报到
13:00-14:30	午餐
15:15-15:30	开幕致辞
15:30-16:10	吴瑞军 *Nodal sets of solutions to Dirac equations*
16:10-16:50	黄冠 *牛顿天体力学问题中的非碰撞奇点轨道*
16:50-17:30	骆泳铭 *Almost sure scattering for the cubic NLS on R3T1*
17:30-18:00	自由讨论时间
18:00-19:30	晚宴

9 月 22 日

Host：Ye Zhang	
09:00-09:40	王林 *两类不可积 Hamilton 系统的动力学*
09:40-10:00	赵泽华 *On scattering for NLS on waveguide manifolds*
10:00-11:30	自由讨论时间
11:30-13:00	午餐
14:00-18:00	自由讨论时间
18:00-19:00	晚餐

学术报告和摘要
(按报告顺序排序)

Nodal sets of solutions to Dirac equations

吴瑞军（北京理工大学）

Abstract: Motivated from some geometric problems, we study the nodal sets of solutions to general Dirac equations. We obtain a dimension estimate via approximating the solutions by harmonic spinors. Further under some growth condition we show that the nodal sets are stratified, using an adapted version of the frequency function for spinors. These generalize the previous well-known results for smooth solutions. This is a joint work with A. Malchiodi and W.Borrelli.

牛顿天体力学问题中的非碰撞奇点轨道

黄冠（北京理工大学）

摘要：所谓非碰撞奇点即有限时间内天体（质点）之间的距离增长到无穷大的轨道且过程中没有发生碰撞。这种奇异轨道在四体及以上的牛顿天体力学问题中的存在性一般被称为 painleve 猜想。这一猜想已由薛金鑫在 2020 年最终解决。在这个报告里，我会回顾非碰撞奇点问题的历史和介绍最新的结果

Almost sure scattering for the cubic NLS on R3T1

骆泳铭（深圳北理莫斯科大学）

Abstract: We consider the Cauchy problem for the defocusing cubic NLS on R3T1 and establish almost sure scattering for random initial data. The main obstacle to extend the classical almost sure scattering results established for the Euclidean spaces to the waveguide manifolds is that the smoothing effect obtained from randomizing the initial data is unavailable for bounded domains. To overcome this difficulty, we exploit a layer-by-layer refinement of the newly established randomization introduced by Shen-Soffer-Wu, which enables us to also obtain strongly smoothing effect from the randomization for the forcing term along the periodic direction. Particularly, we assume no symmetry conditions and the almost sure scattering result is available for arbitrarily rough data.

两类不可积 Hamilton 系统的动力学

王林（北京理工大学）

摘要：作为不可积 Hamilton 系统的两类特殊情形，近可积系统和 Tonelli 系统受到了许多学者的关注。本报告中，我会介绍与合作者关于这两类不可积 Hamilton 系统的一些工作，主要包括反 KAM 理论、Mather 理论和弱 KAM 理论。

On scattering for NLS on waveguide manifolds

赵泽华（北京理工大学）

Abstract: We give an overview for a direction of NLS results: long time behavior for NLS on waveguide manifolds (semiperiodic spaces). We will discuss the main ideas, main tools to handle these problems and the differences from the Euclidean case. In particular, we will also discuss a specific and representative result in this direction by Z. Hani and B. Pausader (they study quintic NLS on RT2).