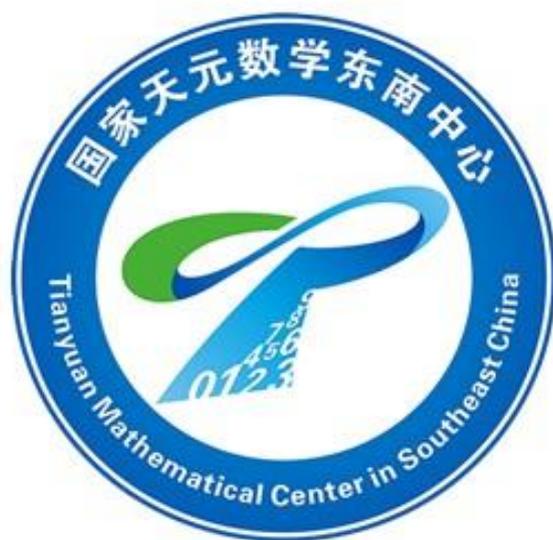




会议手册



加权射影曲线的奇点 理论与量子群 (II)



2022年6月18日



国家天元数学东南中心

目 录

一、 日程表·····	01
二、 学术报告题目与摘要·····	02
三、 参会人员名单·····	04

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学术报告地点（线上）：

腾讯会议 APP 会议 ID： 933-4914-6053（无密码）

会议链接：<https://meeting.tencent.com/dm/hIvy7lV29jVU>

一、日程表

日期	时间	事项	主持人
6 月 18 日	09:00-09:50	n-Slice Algebras of Tame Type 郭晋云（湖南师范大学）	林亚南
	10:00-10:50	Ideal mutations in triangulated categories 朱彬（清华大学）	
	11:00-11:50	On linear independence of cluster monomials 刘品（西南交通大学）	
	12:00	休息	
	14:30-15:20	Auslander--Reiten translation in abstract monomorphism categories 高楠（上海大学）	陈健敏
	15:30-16:20	On the construction of two-sided tilting complexes 胡维（北京师范大学）	
	16:30-17:20	Wakamatsu-tilting dualities and Gorenstein homological invariants 陈红星（首都师范大学）	

二、学术报告题目与摘要

n-Slice Algebras of Tame Type

郭晋云（湖南师范大学）

n-slice algebra is n-hereditary algebra with a $(q, n+1)$ -Koszul $(n+1)$ -preprojective algebra. We have algebraic version of a common generalization of BGG and Beilinson correspondences for n-slice algebras, especially for the tame ones. In this talk, we show that under the BGG correspondence, the Loewy matrix, level dimensional vectors, and complexity theory are applied in the representation theory of a tame n-slice algebra.

Ideal mutations in triangulated categories

朱彬（清华大学）

We introduce the notion of ideal mutations in a triangulated category, which generalizes the version of Iyama and Yoshino by replacing approximations by objects of a subcategory with approximations by morphisms of an ideal. As applications, for a Hom-finite Krull-Schmidt triangulated category T over an algebraically closed field K , (1) We generalize a theorem of Jorgensen to a more general setting; (2) We provide a method to detect whether T has Auslander-Reiten triangles or not by checking necessary and sufficient conditions on its Jacobson radical J : (i) J is functorially finite, (ii) $GhJ = CoGhJ$, and (iii) GhJ -source maps coincide with GhJ -sink maps; (3) We generalize the classical Auslander-Reiten theory by using ideal mutation. This is a joint work with Yaohua Zhang.

On linear independence of cluster monomials

刘品（西南交通大学）

Cluster algebras were invented by Sergey Fomin and Andrei Zelevinsky at the beginning of the year 2000. Their motivations came from Lie theory and more precisely from the study of the so-called canonical bases in quantum groups and that of total positivity in algebraic groups. According to Fomin- Zelevinsky's philosophy, each cluster algebra should admit a 'canonical' basis, which should contain the cluster monomials. This led them to formulate the conjecture on the linear independence of the cluster monomials. This conjecture has been proved recently by Gross-Hacking-Keel-Kontsevich using scattering diagrams. In this talk, we give a concise introduction to cluster algebras and sketch the ingredients of a proof of the

conjecture based on categorification. The proof is valid for certain skew-symmetrizable cluster algebras of finite type and was obtained in recent joint work with C. Fu and S. Geng.

Auslander--Reiten translation in abstract monomorphism categories

高楠（上海大学）

We give a formula for the Auslander--Reiten translation in abstract monomorphism categories, and give applications to projective model structures.

On the construction of two-sided tilting complexes

胡维（北京师范大学）

Given a derived equivalence induced by a one-sided tilting complex T over an algebra A , one can construct the corresponding two-sided tilting complex by taking $(T \otimes A)$ -resolution of the bimodule A . In this talk, we shall see that certain weaker resolution provides also the two-sided tilting complex, and give the two-sided tilting complex of the elementary tilting complex given by an idempotent.

Wakamatsu-tilting dualities and Gorenstein homological invariants

陈红星（首都师范大学）

In the representation theory of algebras, equivalences of additive categories have been applied successfully to compare homological dimensions or invariants of relevant algebras and modules. However, in contrast to covariant equivalences, dualities of categories have received far less attention. In the talk, we establish Wakamatsu-tilting dualities which characterize dualities of resolving subcategories of finitely generated modules as dualities with respect to some Wakamatsu-tilting bimodule, and then provide several equivalent conditions for Wakamatsu-tilting dualities to be tilting dualities. As applications of these dualities, we show that higher algebraic K-groups of projective or Gorenstein-projective modules and semi-derived Ringel-Hall algebras of Gorenstein-projective modules are preserved under tilting. This is a joint work with Jiangsheng Hu (Jiangsu University of Technology).

三、参会人员名单

序号	姓名	单位
1	肖杰	清华大学
2	邓邦明	清华大学
3	朱彬	清华大学
4	徐帆	清华大学
5	邱宇	清华大学
6	周宇	清华大学
7	彭联刚	四川大学
8	付昌建	四川大学
9	耿圣飞	四川大学
10	卢明	四川大学
11	叶郁	中国科学技术大学
12	陈小伍	中国科学技术大学
13	胡维	北京师范大学
14	刘玉明	北京师范大学
15	周国栋	华东师范大学
16	罗栗	华东师范大学
17	郭晋云	湖南师范大学
18	章璞	上海交通大学
19	高楠	上海大学
20	陈红星	首都师范大学
21	何济位	杭州师范大学
22	刘品	西南交通大学
23	韩阳	中国科学院
24	樊赵兵	哈尔滨工程大学
25	林亚南	厦门大学
26	陈健敏	厦门大学
27	阮诗佳	厦门大学
28	谭绍滨	厦门大学
29	王清	厦门大学
30	陈福林	厦门大学
31	余妮娜	厦门大学

32	余世霖	厦门大学
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Tianyuan Mathematical Center in Southeast China

Tianyuan Mathematical Center in Southeast China (TMSE) is one of the five national mathematical centers approved and supported by the Tianyuan Mathematics Fund of the National Natural Science Foundation of China. The unveiling ceremony of the Center was held on January 8th 2019, which marks its official launch and operation.

Tianyuan Mathematics Fund was set up in 1990 with the aim of building China into a strong country in mathematics. It is in 2017 that the academic leadership committee of the Tianyuan Mathematics Fund of the National Natural Science Foundation of China launched the programme of establishing Tianyuan Mathematical Centers for balanced regional development of mathematics. The programme focuses on providing platforms for collaboration and research, and aims to enhance the research in relevant fields, foster research strengths and promote the progress of mathematical sciences. So far there are five Tianyuan Mathematical Centers which are respectively located in the southwest, northwest, northeast, southeast and central of China.

TMSE is based at Xiamen University and co-supported by several other universities in Fujian Province, Zhejiang Province, Guangdong Province, Jiangxi Province and Hainan Province. Centering upon the research on pure mathematics and its interdisciplinary application, TMSE will organize a variety of academic activities with a view to pooling high-caliber talents, promoting international cooperation, cultivating young mathematicians and ultimately advance the progress of mathematical sciences in the southeast part of China.

Under the guidance of the academic leadership committee of the Tianyuan Mathematics Fund of the National Natural Science Foundation of China and with the great support of Xiamen University and the joint efforts of its partner universities for TMSE, the center will make great strides in fostering first-class mathematical talents, producing world-class research and developing into a world-renowned platform for talent cultivation, joint research and academic cooperation.

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