2024年度
中南大学名师名家学术论坛
Radulescu Vicentiu教授学术报告

报告标题：Nonautonomous (p,q)-equations and some perspectives

报告时间：2024日4月15日 (周一) 9:00-11:00

报告地点：数学与统计学院135报告厅

报 告 人：Professor Radulescu Vicentiu

邀 请 人：唐先华 教授

主办单位：中南大学数学与统计学院

Report Abstract:

In the first part of the talk, we shall develop an exhaustive analysis for the nonautonomous (p,q)-eigenvalue problem with indefinite weight and lack of compactness. This analysis distinguishes between the cases where p<q or q<p. In the second part of the talk, we will discuss a nonlinear Dirichlet problem driven by a nonautonomous double-phase differential operator and with a reaction consisting of a strongly singular term plus a concave perturbation. The proofs combine the Nehari manifold method with energy estimates and related variational and topological arguments.

Reporter Introduction:

Radulescu Vicentiu, 克拉约瓦大学教授，波兰 AGH 科技大学教授，罗马尼亚国家科学院终身教授，博士毕业于巴黎六大，师从世界著名偏微分方程专家 Haim Brezis 教授。

Radulescu Vicentiu 教授主要从事非线性椭圆方程、带退化和奇异线性的数学物理方程、非齐次微分算子的谱分析及其在电流变液中的应用等工作，尤其在非线性分析和非线性椭圆型偏微分方程方面有着很深的学术造诣和威望，出版专著 10 部，发表高水平和高影响的学术论文 490 余篇，论文发表在 J. Math. Pures Appl., Israel J. Math., Math. Annalen, Math. Z., Transactions AMS, J. Differential Equation 等发表高水平和高影响的学术论文，多次主持罗马尼亚国家科学研究委员会科研项目。Radulescu Vicentiu 教授是 Clarivate Analytics 高被引研究者，论文被引用次数高达 10816 余次，应邀主题发言、大会报告和邀请报告 50 多次，得到国际学术界高度认可，并作为大会主席组织了多个专题国际学术大会。Radulescu Vicentiu 教授是中国 - 罗马尼亚应用数学研究中心的创始人，同时担任《Advances in Nonlinear Analysis》等高水平数学期刊的主编。

湖南 · 长沙

Meeting Schedule

Date	**Time**	**Trip**	**Place**
Mar. 22nd Friday	14:00-22:00	Report	Fu Shengyuan Hotel
	18:00-20:30	Dinner	
Mar. 23rd Saturday morning	07:00-09:00	Breakfast	Fu Shengyuan Hotel
	09:00-09:20	Opening Ceremony	Conference Room 105, 1st Floor, School of Mathematics and Statistics, Central South University
	09:20-09:50	Conference Report	
	09:50-10:10	Tea Break	
	10:10-11:20	Conference Report	
	11:20-13:00	Lunch	Fu Shengyuan Hotel
	13:00-15:00	Midday Rest	
Mar. 23rd Saturday afternoon	15:00-16:10	Conference Report	Conference Room 105, 1st Floor, School of Mathematics and Statistics, Central South University
	16:10-16:30	Tea Break	
	16:30-17:40	Conference Report	
	17:40-19:00	Dinner	Literary rice art restaurant
Mar. 24th	07:00-09:00	Breakfast	Fu Shengyuan Hotel
	09:00-10:10	Conference	Conference Room 105,

Sunday morning		Report	1st Floor, School of Mathematics and Statistics, Central South University
	10:10-10:30	Tea Break	
	10:30-11:30	Open Discussion	
	11:30-13:00	Lunch	Fu Shengyuan Hotel
Mar. 24th Sunday afternoon	13:00-20:00	Leaving	

Daily Agenda of a Conference

On the morning of March 23, 2024			
Time	**Reporter**	**Moderator**	**Report Title**
09:00-09:20 Opening ceremony		Xianhua Tang	
09:20-09:50	Radulescu Vicentiu	Xianhua Tang	Normalized solutions, ground state solutions, and beyond
09:50-10:10	Tea Break		
10:10-10:40	Minbo Yang	Dongdong Qin	Nondegeneracy of positive solutions for a biharmonic hartree equation and its applications
10:50-11:20	Jianjun Zhang	Sitong Chen	Normalized ground states for a coupled Schrodinger system
On the afternoon of March 23, 2024			
Time	**Reporter**	**Moderator**	**Report Title**
15:00-15:30	Binlin Zhang	Jian ZHang	Bifurcation and regularity analysis of the Schrodinger-Poisson equation
15:40-16:10	Chao Ji	Wen Zhang	Some recent results on nonlinear Schrodinger equations on lattice graphs
16:10-16:30	Tea Break		
16:30-17:00	Chao Zhang	Fangfang Liao	Some recent results on the mixed local and nonlocal parabolic equations

17:10-17:40	Weiping Yan	Jianhua Chen	Asymptotic stability of the Simons cone for the spherically symmetric timelike extremal hypersurfaces in Minkowski space
On the morning of March 24, 2024			
Time	**Reporter**	**Moderator**	**Report Title**
09:00-09:30	Xianyong Yang	Sitong Chen	Infinitely many normalized solutions for a quasilinear Schrödinger equation
09:40-10:10	Youpei Zhang	Dongdong Qin	Existence of Solutions for a Critical Choquard–Kirchhoff Problem with Variable Exponents
10:10-10:30	Tea Break		
10:30-11:30	Open Discussion		

会议报告摘要

（按报告人姓氏首字母顺序排序）

Some recent results on nonlinear Schrodinger equations on lattice graphs

姬超

华东理工大学

Abstract: In this talk, we will introduce some recent results on nonlinear Schrodinger equations on lattice graphs. We also introduce some differences between graph problems and continuous problems.

Normalized solutions, ground state solutions, and beyond

Radulescu Vicentiu

克拉约瓦大学

Abstract: This talk is a tribute to the scientific achievements of the Mathematical School coordinated by Professor Xianhua Tang. I share some of my experience in this group for the better understanding of some basic classes of solutions of nonlinear PDEs, such as “normalized solutions” and “ground state solutions”. The content of my talk is based on the recent papers {1], [2] and [3]. Some perspectives and related remarks will be given in the final part of this talk.

References:

[1] D. Qin, V. Radulescu, X. Tang, Ground states and geometrically distinct solutions for periodic Choquard-Pekar equations, J.Differential

Equations 275 (2021), 652-683.

[2] S. Chen, V. Radulescu, X. Tang, Multiple normalized solutions for the planar Schrödinger–Poisson system with critical exponential growth, Math. Z. 306 (2024), no. 3, Paper No. 50.

[3] S. Chen, D. Qin, V. Radulescu, X. Tang, Ground states for quasilinear equations of N-Laplacian type with critical exponential growth and lack of compactness, submitted.

Nondegeneracy of positive solutions for a biharmonic hartree equation and its applications

杨敏波

浙江师范大学

Abstract: In this talk, we introduce some problems related to the following biharmonic hartree equation. First, by using the spherical harmonic decomposition and the Funk-Heck formula of the spherical harmonic functions, we prove the nondegeneracy of the positive solutions of the above biharmonic equation. As applications, we investigate the stability of a version of nonlocal Sobolev inequality and give a gradient form remainder. Moreover, by applying a finite dimension reduction and local Poho$\check{z}$aev identity, we can also construct multi-bubble solutions for the equation with potential. We will show what is the role of the order of the Riesz potential in proving the existence result. In fact, the existence result is restricted to the range $6-\frac{12}{N-4}\le\alpha<N$.

Asymptotic stability of the Simons cone for the spherically symmetric timelike extremal hypersurfaces in Minkowski space

闫卫平

广西大学

Abstract: The Simons cone is known as a counter-example of Bernstein conjecture for the minimal surface equation. This celebrated minimal surface is a stationary solution of the timelike extremal hypersurface equation in higher dimension. In this talk, we introduce asymptotic stable of the Simons cone for the vanishing mean curvature flow in higher dimension. We prove that if the Simons cone is perturbed by a small radial symmetric initial data, then there exists a global unique solution of the vanishing mean curvature flow asymptotic to the Simons cone. It means that a unique global timelike extremal surface asymptotically to the Simons cone is constructed.

Infinitely many normalized solutions for a quasilinear Schrödinger equation

杨先勇

云南民族大学

Abstract: In this talk, I will discuss some new results for a quasilinear Schrödinger equation which is derived as a model of several physical phenomena . Under the assumption of Berestycki-Lions condition, the existence of infinitely many normalized solutions is obtained via minimax argument.

Normalized ground states for a coupled Schrodinger system

张建军

重庆交通大学

Abstract: In this talk, we are concerned with the existence of normalized solutions to systems of coupled Schrodinger equations

$$\begin{cases} -\Delta u + \lambda_1 u = \mu_1 u^{p-1} + \beta r_1 u^{r_1-1} v^{r_2}, \\ -\Delta v + \lambda_2 v = \mu_2 v^{q-1} + \beta r_2 u^{r_1} v^{r_2-1}, \\ 0 < u, v \in H^1\left(\mathbb{R}^N\right), 1 \le N \le 4, \end{cases}$$

satisfying the normalization

$$\int_{\mathbb{R}^N} u^2 dx = a, \quad \int_{\mathbb{R}^N} v^2 dx = b,$$

Here and the prescribed masses We focus on the coupled purely mass super-critical case, i.e.,

$$2 + \frac{4}{N} < p, q, r_1 + r_2 < 2^*$$

with being the Sobolev critical exponent. We optimize the range of $(a, b, \beta, r_1 . r_2)$ for the existence. In particular, for $N = 3,4$ with $r_1, r_2 \in (1,2)$ our result indicates the existence for all $a, b > 0$ and $\beta > 0$. This is based on the joint work with Louis Jeanjean and Xuexiu Zhong.

Bifurcation and regularity analysis of the Schrodinger-Poisson equation

张彬林

山东科技大学

Abstract: In this talk, we present bifurcation results for solutions of the Schrodinger-Poisson system in dimension three, involving subcritical and

critical nonlinearities and using the global bifurcation theorem. Furthermore, we establish the existence of unbounded components of solutions, which bifurcate from trivial solutions and from infinity, respectively. Finally, we also analyze the regularity result that guarantees the bound of the solutions of the nonlinear Schrodinger-Poisson system under consideration. This is a joint work with Patrizia Pucci and Linlin Wang.

Some recent results on the mixed local and nonlocal parabolic equations

张超

哈尔滨工业大学

Abstract: In recent years, the mixed local and nonlocal problems have been widely studied owing to its essential applications in plasma physics and biology. In this talk, we first review some known regularity results for the mixed local and nonlocal problems. Then we present some recent regularity results for the mixed local and nonlocal p-Laplacian type parabolic equations and mixed parabolic equations with double phase structure.

Existence of Solutions for a Critical Choquard–Kirchhoff Problem with Variable Exponents

张友培

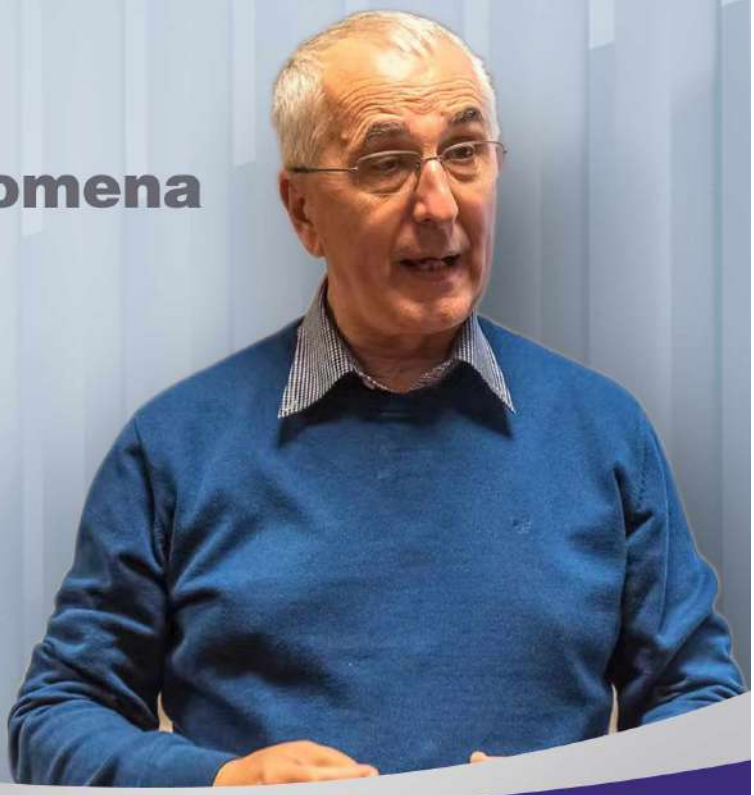
国防科技大学理学院

Abstract: We consider the Choquard–Kirchhoff problem involving

variable exponents and critical nonlinearity in the whole space. Combining the concentration-compactness principle in, the Hardy Littlewood Sobolev type inequality with variable exponents, and the mountain pass theorem, we provide the existence of nontrivial radial solutions for the above problem in nondegenerate and degenerate cases. This work is in cooperation with Professor Qin.

哈爾濱工業大學 数学研究院
Institute for Advanced Study in Mathematics of HIT

Some striking phenomena in the analysis of (p,q)–equations



VICENTIU RADULESCU

Romanian Academy
University of Craiova

Abstract:

I shall discuss some new recent striking results that appear in the analysis of problems with unbalanced growth. In the isotropic case, I shall point out an interesting discontinuity property of the spectrum. In the second part my talk, I will discuss the anisotropic case and I shall discuss a new case corresponding to equations with mixed regime. Several new research directions will be highlighted in the final part of this talk.

About the Speaker:

Vicentiu Radulescu教授是罗马尼亚国家科学院、克拉约瓦大学和波兰AGH科技大学终身教授。博士毕业于巴黎六大，师从世界著名偏微分方程专家Haim Brezis教授。主要从事非线性椭圆方程带退化和奇异线性的数学物理方程、非齐次微分算子的谱分析及其在电流变液中的应用等工作，尤其在非线性分析和非线性椭圆方程方面具有较深的学术造诣和威望，出版专著12部，在《Math. Ann.》、《J. Math. Pures Appl.》、《Trans. Amer. Math. Soc》、《Math. Z.》、《Comm. PDE》、《Calc. Var. PDE》、《Nonlinearity》、《J. Diff. Equ.》、《SIAM J. Math. Anal.》等国际著名期刊发表高水平和高影响的学术论文400余篇，多次主持罗马尼亚国家科学研究委员会科研项目，应邀主题发言、大会报告和邀请报告60余次，作为大会主席组织了多个专题国际学术大会，得到了国际学术界的高度认可。担任10多个国际SCI期刊的主编和编委。Radulescu教授是中国-罗马尼亚应用数学研究中心的创始人。

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2024 (Friday)
TIME : 15:30-16:30
VENUE : Mingde Building B201
COFFEE & DISCUSSION: 16:30–16:45

杰出学者讲座
DISTINGUISHED COLLOQUIUM

華東理工大學
EAST CHINA UNIVERSITY OF SCIENCE AND TECHNOLOGY

Isotropic and anisotropic (p,q)-equations: new phenomena

报告人： Prof. Vicentiu D. Radulescu

Institute of Mathematics of the Romanian Academy, Bucharest and University of Craiova, Romania

报告摘要：I shall discuss two striking phenomena that appear in the analysis of problems with unbalanced growth. In the isotropic case, I shall point out both the existence of continuous spectrum and a discontinuity property of the spectrum for a large class of (p,q)-Laplace operators. In the second part of my talk, I shall discuss a new class of phenomena that appear in the study of anisotropic operators with variable exponent. This is associated with problems having a mixed regime, namely with a subcritical-critical-supercritical behavior. Several perspectives and open problems are pointed out in the final part of this talk.

报告人简介：Vicentiu D. Radulescu 教授是国际著名非线性分析领域专家，现为罗马尼亚克拉约瓦大学教授、波兰克拉科夫 AGH 科技大学教授、罗马尼亚科学院数学研究所终身教授，中国-罗马尼亚应用数学研究中心创始人。他在国际著名期刊 Math. Ann., J. Math. Pures Appl., Math. Z., Israel J. Math., SIAM J. Math. Anal. 等发表高水平学术论文490余篇，论文被引总次数高达1.66万余次。2014年入选 Thomson Reuters 高被引学者，2019-2021连续三年被评为 Clarivate Analytics 高被引学者，Radulescu 教授先后现担任 Adv. Nonlinear Anal., Nonlinear Analysis, Bound. Value Probl. 等4个SCI期刊的主编，同时担任 J. Geom. Anal., Math. Methods Appl. Sci., Asymptotic Anal., Discrete Contin. Dyn. Syst. Ser. S, 及 Complex Var. Elliptic Equ., 等多个SCI期刊的编委。

时间：2024年3月29日（周五） 下午 16:15-17:15
报告地点：八教#505

校级学术报告

Elliptic equations driven by the Stuart differential operator and some perspectives

Vicenţiu D.Rădulescu

克拉约瓦大学

2024年4月1日13:00-14:00

华东师范大学闵行数学楼401报告厅

报告摘要

We are concerned with a class of second order quasilinear elliptic equations driven by a nonhomogeneous differential operator introduced by C.A. Stuart and whose study is motivated by models in Nonlinear Optics. We establish sufficient conditions for the existence of at least one or two non-negative solutions. Our analysis considers the cases when the reaction has either a sublinear or a linear growth. In the sublinear case, we also prove a nonexistence property. The second part of this paper is devoted to subcritical and critical cases for problems with lack of compactness. Some perspectives around this new topic are developed during this talk.

报告人介绍

Vicenţiu D.Rădulescu，罗马尼亚国家科学院终身院士，博士毕业于巴黎六大，师从世界著名偏微分方程专家Haim Brezis教授。Rădulescu教授主要从事非线性椭圆方程、带退化奇异项的数学物理方程、非齐次积分算子的谱分析及其在电流变液中的应用等工作，出版专著10余部，在国际著名期刊上发表高水平的学术论文近500篇，多次主持罗马尼亚国家科学研究委员会科研项目，Rădulescu教授是Thomson Reuters高被引研究者，论文被引用次数高达11000余次，应邀主旨发言、大会报告和邀请报告30余次，得到了国际学术界的高度认可，并作为大会主席组织了多个专题国际学术大会，同时担任多个国际SCI期刊的主编或编委。

華東師範大學 | 数学科学学院

School of Mathematical Sciences, East China Normal University

首都师范大学
建校七十周年
THE 70TH ANNIVERSARY OF CAPITAL NORMAL UNIVERSITY

励新卓越论坛

——首都师范大学数学科学学院建校70周年系列学术活动

Ambrosetti-Prodi problems for Robin (p,q)-equations

主讲人

Vicentiu Radulescu

(Institute of Mathematics of the Romanian Academy, Bucharestand University of Craiova, Romania; AGH University of Krakow, Poland)

时间

4月9日（周二）上午10:30-11:30

地点

教二楼627

教师简介

勒杜列斯库，罗马尼亚科学院院士，巴黎第六大学（皮埃尔和玛丽居里大学）博士毕业。现任巴黎第六大学雅戈路易·里翁实验室教授兼博士导师，“西米翁·斯托伊洛夫”数学研究所教授研究员，克拉约瓦大学数学系正教授，阿卜杜阿齐兹国王大学杰出客座教授，卢布尔雅那大学数学研究所研究员。长期从事椭圆方程的退化和奇异现象的研究，拓扑和变分方法在微分方程中的应用，分歧理论在物理化学生物学领域的应用，以及微分算子的谱分析的相关研究，并在核心刊物发表论文三百余篇，曾获西米翁·斯托伊洛夫数学奖，罗马尼亚研究会颁发的卓越研究奖，克拉约瓦大学杰出特邀教授的称号，担任多家业内核心期刊编辑，荣获数学分析与应用杂志最佳总编辑的称号，在国际微分方程领域享有盛誉。

报告摘要

I shall report on some results in a recent joint paper with Nikolaos Papageorgiou (National Technical University, Athens) and Jian Zhang (Hunan University of Technology and Business). The classical Ambrosetti-Prodi problem considers perturbations of the linear Dirichlet Laplace operator by a nonlinear reaction whose derivative jumps over the principal eigenvalue of the operator. In this talk, we develop a related analysis for parametric problems driven by the nonlinear Robin (p,q)-Laplace operator. Under hypotheses that cover both the (p-1)-linear and the (p-1)-superlinear case, we prove an optimal existence and multiplicity property of solutions, as well as a non-existence result.

联系人：童纪龙


杰出学者讲座
Distinguished Colloquium
Some striking phenomena in the analysis of (p,q)-equations
Vicentiu Radulescu
Romanian Academy & University of Craiova
04/12 (Fri) 15:30-16:30
Harbin Institute of Technology

Serial Reports

Biology Medicine Mathematics

Old and new in the mathematical analysis of problems with unbalanced growth

Vicentiu Radulescu

Institute of Mathematics of the Romanian Academy and University of Craiova, Romania

报告时间: 2024年3月27日（周三）15:00-16:00

报告地点: 计算机楼718报告厅

Abstract: I shall discuss two striking results concerning the study of double phase elliptic equations. In the isotropic case, I will establish a new discontinuity property of the spectrum. The proof is based on Nehari manifold analysis. Next, in the isotropic case, I will introduce a new research direction corresponding to problems with mixed regime (subcritical-critical-supercritical equations). The Palais principle of symmetric criticality is a basic tool in the analysis of these problems in the symmetric case. Some perspectives and open problems are developed in the final part of this talk.

Radulescu Vicentiu，克拉约瓦大学教授，波兰AGH科技大学教授，罗马尼亚国家科学院终身教授，博士毕业于巴黎六大,师从世界著名偏微分方程专家Haim Brezis教授。Radulescu Vicentiu教授主要从事非线性椭圆方程、带退化和奇异线性的数学物理方程、非齐次微分算子的谱分析及其在电流变液中的应用等工作，尤其在非线性分析和非线性椭圆型偏微分方程方面有着很深的学术造诣和威望,出版专著10部,发表高水平和高影响的学术论文490余篇,论文发表在J. Math. Pures Appl.,Math. Annalen, Math. Z., Transactions AMS, Israel J. Math., J. Differential Equation等发表高水平和高影响的学术论文，多次主持罗马尼亚国家科学研究委员会科研项目。Radulescu Vicentiu 教授是Clarivate Analytics 高被引研究者，论文被引用次数高达10816余次，应邀主题发言、大会报告和邀请报告50多次，得到了学术界的高度认可，并作为大会主席组织了多个专题国际学术大会。Radulescu Vicentiu教授现任《Advances in Nonlinear Analysis》等高水平数学期刊的主编。Radulescu Vicentiu教授是中国-罗马尼亚应用数学研究中心的创始人。

Chair: Prof. Zhan Zhou

Center for Applied Mathematics, Guangzhou University