非线性分析学术研讨会（2020.12.21）

主办单位：福建师范大学数学与信息学院、福建省分析数学及应用重点实验室、福建省应用数学中心（福建师范大学）

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会议安排

（2020.12.21 下午）

Zoom ID: **856 0508 7378** Passcode: **202020**			
13:30—13:40	开始		
	报告人	题目	主持人
13:40—14:25	**Tatsuya Watanabe (Kyoto Sangyo University)**	**Ground state solutions for quasilinear scalar field equations arising in nonlinear optics**	**李永青**
14:25—14:30	休息		
14:30—15:15	**Sheng-Sen Lu (Peking University)**	**A mass supercritical problem revisited: ground states**	**Kazunaga Tanaka**
15:15—15:30	休息		
15:30—16:15	**Luyan Zhou (Beijing Normal University)**	**Global bifurcation for coupled nonlinear Schrödinger equations under Neumann boundary condition**	**陈建清**
16:15—16:20	休息		
16:20—17:05	**Michinori Ishiwata (Osaka University)**	**On global bounds for semilinear parabolic problem with variable exponent touching the critical Sobolev exponent**	**王志强**
17:05—17:10	结束		

TITLE AND ABSTRACT

Michinori Ishiwata(Osaka University)

Title: On global bounds for semilinear parabolic problem with variable exponent touching the critical Sobolev exponent

Abstract: In this talk, we discuss the existence of global bounds for time-global solutions for parabolic problem with variable exponent which touches the critical Sobolev exponent. The existence of the global bounds is related with the compactness of the corresponding Sobolev embedding. First we introduce a compactness result for this embedding under an assumption on the variable exponent function and discuss how the global bounds follows from the same assumption. The discussion is based on the profile decomposition.

Sheng-Sen Lu (Peking University)

Title: A mass supercritical problem revisited: ground states

Abstract: In any dimension $N \geq 1$ and for given mass $m > 0$, we revisit the nonlinear Schrödinger equation with an L^2 constraint:

$$\begin{cases} -\Delta u = f(u) - \mu u \quad \text{in } \mathbb{R}^N, \\ \|u\|^2_{L^2(\mathbb{R}^N)} = m, \\ u \in H^1(\mathbb{R}^N), \end{cases} \tag{P_m}$$

where $\mu \in \mathbb{R}$ arises as a Lagrange multiplier. Assuming only that the nonlinearity f is continuous and satisfies weak mass supercritical conditions, we show the existence of ground states to (P_m) and reveal the basic behavior of the ground state energy E_m as the mass $m > 0$ varies. In particular, to overcome the compactness issue when looking for ground states, we develop robust arguments which we believe will allow treating other L^2 constrained problems in general mass supercritical settings.

This talk is based on a joint work with Professor Louis Jeanjean.

Tatsuya Watanabe (Kyoto Sangyo University)

Title: Ground state solutions for quasilinear scalar field equations arising in nonlinear optics

Abstract: We study a class of quasilinear elliptic equations which appears in nonlinear optics. By using the mountain pass theorem together with a technique of adding one dimension of space, we prove the existence of a non-trivial weak solution for general nonlinear terms of Berestycki-Lions' type.

This is a joint work with A. Pomponio.

Luyan Zhou (Beijing Normal University)

Title: Global bifurcation for coupled nonlinear *Schrödinger* equations under Neumann boundary condition

Abstract: In this talk, we focus on the nonlinear coupling effect and investigate the local and global bifurcation structure of positive solutions for the coupled nonlinear *Schrödinger* equations with the homogeneous Neumann boundary condition in terms of the nonlinear coupling parameter. Our studies reveal that there is a richer structure of bifurcation phenomena for the Neumann system than for the well studied counterpart of the system with the Dirichlet condition. More precisely, for the Neumann system, there can be multiple bifurcating tree structure, a structure consisting of three parts: a pair of semi-trivial solution branches from which a pair of synchronized solution branches bifurcate, and infinitely many segregated solution branches emanating from the synchronized solution branches as secondary bifurcations. For the Dirichlet problem, there exists a unique bifurcating tree in radially symmetric domains.