

# 方程專題討論-課程大綱及進度表-2021-09

方程專題討論 SEMINAR ON HYPERBOLIC PARTIAL DIFFERENTIAL EQUATION

課程碼: L183400 分班碼: None 開課序號: L1-032 學分數: --

核心能力

掌握連續與逼近的能力

Ability to handle continuity phenomena and approximations.

處理數字及符號運算的能力

Ability to operate with symbols and digits.

透視形像與空間的能力

Ability to visualize space, shape, and images.

利用計算機處理數學的能力

Ability of computer to do mathematics.

應用隨機理論的能力

Ability to apply stochastic mathematics.

處理大量數據的能力

Ability to handle large amount of data.

處理離散型數學的能力

Ability to do mathematics relating to discrete models.

獨立研究與撰寫論文的能力

Ability to do independent researches and to write thesis.

使用計算機的能力

Abilities to use computer as a tool.

基本素養 無

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課程概述 Course Description

每週對於所指導之研究生所課程安排之討論課程，研究學習微分方程。

We will arrange one discussion per week for each of students.

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先修課程或先備能力 Prerequisite Course(s):

高等微積分，線性代數，微分方程，偏微分方程，計算器，數學軟體 Maple, Matlab, Mathematica 等任何一種

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教師聯絡資訊 Contact with Teacher

開課教師：方永富

研究室：數館 210 室

e-mail: yffang@mail.ncku.edu.tw

電話：275-7575 轉 65131

授課時間：星期三 9~A

Office Hours：星期一，三：12：10-13：00

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助教資訊 Contact with Tutor

本課程將沒有助教協助研討課，負責講解作業及小考測驗

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## 課程學習目標 Course Objectives

HUANG-GUO-HENG-2020-Scattering for 3D QZ in L2

Merle-Tsutsumi-1990-L2 concentration of blow-up for NLS with critical power

Ogawa-Tsutsumi-1991-Blow-up-of-H1-solution-for-NLS

Tsutsumi-1990-Rate of L2 concentration of blow-up solutions for the NLS

Local Well Posedness of NLS

Global Existence and Finite-Time Blowup

Stability of Solitary Waves for the quantum Zakharov Equations -----

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## 課程進度 Course Outline

In the 1st semester:

週次 Week 進度說明 Progress Description

1 Ogawa-Tsutsumi-1991-Blow-up-of-H1-solution-for-NLS

2 Ogawa-Tsutsumi-1991-Blow-up-of-H1-solution-for-NLS

3 HUANG-GUO-HENG-2020-Scattering for 3D QZ in L2

4 HUANG-GUO-HENG-2020-Scattering for 3D QZ in L2

5 HUANG-GUO-HENG-2020-Scattering for 3D QZ in L2

6 Merle-Tsutsumi-1990-L2 concentration of blow-up for NLS with critical power

7 Merle-Tsutsumi-1990-L2 concentration of blow-up for NLS with critical power

8 Tsutsumi-1990-Rate of L2 concentration of blow-up solutions for the NLS

9 Tsutsumi-1990-Rate of L2 concentration of blow-up solutions for the NLS

10 Tsutsumi-1990-Rate of L2 concentration of blow-up solutions for the NLS

11 Guo-Nakanishi-Wang-2013-Global dynamics below the ground state energy for the Zakharov system in the 3D radial case

12 Guo-Nakanishi-Wang-2013-Global dynamics below the ground state energy for the Zakharov system in the 3D radial case

13 Guo-Nakanishi-Wang-2013-Global dynamics below the ground state energy for the Zakharov system in the 3D radial case

14 Guo-Nakanishi-Wang-2013-Global dynamics below the ground state energy for the Zakharov system in the 3D radial case

15 Guo-Nakanishi-Wang-2013-Global dynamics below the ground state energy for the Zakharov system in the 3D radial case

16 Candy-Herr-Nakanishi-2021-GWP for the energy-critical Zakharov system below the ground state

17 Candy-Herr-Nakanishi-2021-GWP for the energy-critical Zakharov system below the ground state

18 Candy-Herr-Nakanishi-2021-GWP for the energy-critical Zakharov system below the ground state

以上每週進度教師可依上課情況做適度調整。 The schedule may be subject to change.

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## 教學方法 Teaching Strategies

方法 百分比%

講授 Lecture 30

討論 Discussion 70

※請遵守智慧財產權觀念 不得非法影印

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課程教材 Course Material

Lecture Notes, Homework, Quizzes , 計算器, 數學軟體 Maple, Matlab, Mathematica 等任何一種

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參考書目 References

Partial Differential Equations, An Introduction by Walter Strauss

Partial Differential Equation by Fritz John

Partial Differential Equations by Lawrence Evans

Semilinear Schrödinger equations by Thierry Cazenave

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評量方式 Grading

方法 百分比%

出席 Participation: 5%

口頭報告 Presentation : 70%

作業 Homework: 25%

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學習規範 Course Policy

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1. 作業不能遲交。
  2. 缺考需要醫師證明、或家長證明、或學校公假單。
  3. 考試違規，報請學校處理。
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課程網址 Course Website:

Moodle and <http://www.math.ncku.edu.tw/~fang>

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備註 Remarks

課程概述 Course Description

In this semester, we want to study the following topics.

HUANG-GUO-HENG-2020-Scattering for 3D QZ in L2

Merle-Tsutsumi-1990-L2 concentration of blow-up for NLS with critical power

Ogawa-Tsutsumi-1991-Blow-up-of-H1-solution-for-NLS

Tsutsumi-1990-Rate of L2 concentration of blow-up solutions for the NLS

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Global Existence and Finite-Time Blowup

Stability of Solitary Waves for the quantum Zakharov Equations

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有關課程其他調查 Other Surveys of Courses

1. 本課程是否規劃業界教師參與教學或演講? 否

Is there any industry specialist invited in this course? How many times? No

2. 本課程是否規劃內含校外實習 (並非參訪)? 否

Is there any in (out of) school practicum involved in this course? How many hours? No

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開課系所 Department/Institute: 應數所 MATH

開課教師 Instructor: 方永富 Fang, Yung-Fu

開課學年 Academic Year: 01054

開課學期 Semester: 2

開課序號 Serial Number: 005

課程屬性碼 Attribute Code: L1

課程碼 Course Number: L170310

分班碼 Class Code:

學分數 No. of Credits: 3

課程語言 Medium of Instruction: 中文  
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