

2026/01/16

所属・職名 The School of Mathematical Sciences, Fudan University・Professor

Name: Jin CHENG

	整理番号	2025b009		
1.研究計画題目	China-Japan Joint Workshop on Practical Inverse Problems Based on Interdisciplinary and/or Industry-Academia Collaboration			
2.新規・継続	New			
3.種別	国際プロジェクト研究			
4.種目	研究集会（I）			
5.開催方法				
6.研究代表者	氏名	Jin CHENG		
	所属 部局名	The School of Mathematical Sciences, Fudan University	職 名	Professor
7.研究実施期間	2025年10月14日～2025年10月17日			
8.キーワード	Practical inverse problems, Interdisciplinary and/or industry-academia collaboration, machine learning, artificial intelligent			
9.参加者人数	29			

## 10.本研究で得られた成果の概要

We organized a four days workshop and introduced the progress of researches in practical inverse problems based on interdisciplinary and/or industry-academia collaboration between China and Japan.

In this workshop, new results in practical inverse problems based on interdisciplinary and/or industry-academia collaboration were reported and lively discussion were had on them.

Among the results are

- Data assimilation problems,
- Inverse design problems for PCSEL devices,
- Retracting the mechanism from the observation data and data compression,
- Learning based numerical methods for PDE,
- Road surface maintenance problem,
- Positioning by satellite navigation system,
- Inverse problems for new medical imaging technique,
- An inverse problem in geophysics

and so on.

In this workshop, we also have discussed to continue international collaboration in practical inverse problems based on interdisciplinary and/or industry-academia collaboration, between China and Japan.

We hope that this project will produce new activities in the research of practical inverse problems.

# Report on the workshop “China-Japan Joint Workshop on Practical Inverse Problems Based on Interdisciplinary and/or Industry-Academia Collaboration ”

In both China and Japan, practical inverse problems based on interdisciplinary and/or industry-academia collaboration are being studiously studied now. One of the organizing committee of this workshop served as the chief investigator of a series of workshops on practical inverse problems organized by Institute of Mathematics for Industry, 2013-2022.

In view of this background, we organized this workshop to promote international exchange in practical inverse problems based on interdisciplinary and/or industry-academia collaboration, between China and Japan.

From China side, the researches on

1. Data assimilation problems,
2. Inverse design problems for PCSEL devices,
3. Retracting the mechanism from the observation data and data compression,
4. Learning based numerical methods for PDE

and other related inverse problems were introduced.

From Japan side, the researches on

1. Road surface maintenance problem,
2. Positioning by satellite navigation system,
3. Inverse problems for new medical imaging technique
4. An inverse problem in geophysics

and other related inverse problems were introduced.

Participants had lively discussions on all talks. In this workshop, projects in international collaboration in practical inverse problems based on interdisciplinary and/or industry-academia collaboration, between China and Japan, were promoted. We hope that these projects will produce new activities in the research of practical inverse problems and we continue to have another opportunity to promote international exchange in practical inverse problems based on interdisciplinary and/or industry-academia collaboration, between China and Japan.

We plan to publish the proceedings of this workshop from Springer to report the achievements.

#### **Organizing Comitee:**

- Jin CHENG (Fudan University)
- Takashi TAKIGUCHI (National Defense Academy of Japan)
- Cheng HUA (Fudan University)
- Hiroshi TAKASE (Kyushu University)
- Yu JIANG (Shanghai University of Finance and Economics)
- Kenji HASHIZUME  
(West Nippon Expressway Engineering Shikoku Company Limited)



開催日:2025/10/14~2025/10/17

## China-Japan Joint Workshop on Practical Inverse Problems Based on Interdisciplinary and/or Industry-Academia Collaboration | 2025b009

カテゴリー: イベント

タグ:

国際研究

研究集会I

### 開催概要

- 開催方法: 対面開催
- 開催場所: JR博多シティ9階会議室 (1) (2)
- 主要言語: 英語
- 主催: 九州大学マス・フォア・インダストリ研究所
- 種別・種目: 国際プロジェクト研究-研究集会 (I)
- 研究計画題目: China-Japan Joint Workshop on Practical Inverse Problems Based on Interdisciplinary and/or Industry-Academia Collaboration | 2025b009
- 研究代表者: Jin CHENG (The School of Mathematical Sciences, Fudan University・Professor)
- 研究実施期間: 2025年10月14日 (火) - 2025年10月17日 (金)
- 公開期間: 2025年10月14日 (火) - 2025年10月17日 (金)
- 研究計画詳細: [https://joint2.imi.kyushu-u.ac.jp/en\\_research\\_chooses/view/2025b009](https://joint2.imi.kyushu-u.ac.jp/en_research_chooses/view/2025b009)

### プログラム

#### 10月14日

9:50 Opening

10:00-10:40

Mikiko YAMASHITA (West Nippon Expressway Shikoku Engineering Company Limited)

Development and operation of the non-destructive inspection devices for road structures

10:50-11:30

Kenji HASHIZUME (West Nippon Expressway Shikoku Engineering Company Limited)

Non-integer dimensional analysis of the deterioration on the permeable asphalt pavement and its application to predict the occurrence of the potholes just before they occur

11:40-12:20

Yu JIANG (Shanghai University of Finance and Economics)

Recovery in vivo viscoelasticity from elastography measured data

14:00-14:40

Yu CHEN (Shanghai University of Finance and Economics)

An approximation for solutions to elliptic equations and its application in reconstruction of solution mapping

14:50-15:30

Takayuki OCHI (Tohoku Polytechnic Colledge)

An inverse problem of shape reconstruction in 3D CA

15:40-16:20

**Makoto MARUYA (GeoInsight LLC)**

Mitigating the multipath problem in the Global Navigation Satellite System utilizing a 3-D map

## 10月15日

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10:00-10:40

**Hiroshi FUJIWARA (Kyoto University)**

Numerical feasibility of the Cauchy problem of the Laplace equation and its application

10:50-11:30

**Jin CHENG (Fudan University)**

Numerical Solutions of Maxwell Equations with Finite Periodic Structures and Applications

11:40-12:20

**Hiroshi TAKASE (Kyushu University)**

Stability in elliptic inverse problems for determining boundary functions

14:00-14:40

**Manabu MACHIDA (Kindai University)**

Inverse problems for the time-fractional advection-diffusion equation and their practical meanings

15:00-16:30

Discussion

## 10月16日

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10:00-10:40

**Jijun LIU (Southeast University)**

Electrical Impedance Tomography: Models and Algorithms

10:50-11:30

**Takashi OHE (Okayama University of Science)**

Application of Convolution Quadrature to the Method of Fundamental Solutions for Diffusion Equations

11:40-12:20

**Cheng HUA (Fudan University)**

Proposal of a Numerical Model Toward Winding Optimization and Fatigue Life Estimation for Type III Hydrogen Storage Tank

14:00-14:40

**Daisuke KAWAGOE (Kyoto University)**

Remarks on propagation of discontinuities in stationary radiative transfer

14:50-15:30

**Yizhuang SONG (Shandong Normal University)**

Equipotential line harmonic Bz algorithm for MREIT with a single measurement

15:40-16:20

**Dinghua XU (Zhejiang Sci-Tech University)**

Inverse Problems Methodology for Functional Clothing Design

## 10月17日

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10:00-10:40

**Jianjin WU (Shanghai University of Finance and Economics)**

A Weak-form POP Algorithm and Its Application in Meteorological Dynamic Model Identification

10:50-11:30

**Shuai LU (Fudan University)**

Function spaces for neural networks and their applications

11:40-12:20

**Boxi XU (Shanghai University of Finance and Economics)**

Linearized inverse potential problems at a high frequency

14:00-14:40

**Min ZHONG (Southeast University)**

Solving the acousto-electric tomography by the adaptive Nesterov method of Kaczmarz type

14:50 Closing

## Organizing Committee

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Takashi TAKIGUCHI (National Defense Academy of Japan)

Cheng HUA (Fudan University)

Hiroshi TAKASE (Kyushu University)

Yu JIANG (Shanghai University of Finance and Economics)

Kenji HASHIZUME (West Nippon Expressway Engineering Shikoku Company Limited)

## ポスター

International Project Research

# China-Japan Joint Workshop on Practical Inverse Problems Based on Interdisciplinary and/or Industry-Academia Collaboration 14th Oct. - 17th. Oct., 2025

## Speakers:

CHENG Jin (Fudan University)  
HUA Cheng (Fudan University)  
LU Shuai (Fudan University)  
WANG Wei (Jiaxing University)  
SONG Yizhuang (Shandong Normal University)  
JIANG Yu (Shanghai University of Finance and Economics)  
WU Jianjin (Shanghai University of Finance and Economics)  
XU Boxi (Shanghai University of Finance and Economics)  
CHEN Yu (Shanghai University of Finance and Economics)  
ZHONG Min (Southeast University)  
LIU Jijun (Southeast University)  
XU Dinghua (Zhejiang Sci-Tech University)  
LAI Jun (Zhejiang University)  
XU Xiang (Zhejiang University)  
LIN Hongxiang (Hangzhou International Innovation Institute of Beihang University)  
HASHIZUME Kenji (West Nippon Expressway Engineering Shikoku Company Limited)  
YAMASHITA Mikiko (West Nippon Expressway Engineering Shikoku Company Limited)  
FUJIWARA Hiroshi (Kyoto University)  
KAWAGOE Daisuke (Kyoto University)  
OHE Takashi (Okayama University of Science)  
MARUYA Makoto (Geolinsight LLC)  
MACHIDA Manabu (Kindai University)  
TAKASE Hiroshi (Kyushu University)  
OCHI Takayuki (Tohoku Polytechnic College)

## Organizer

Institute of Mathematics for Industry, Kyushu University

## Organizing Committee

CHENG Jin (Fudan University)  
TAKIGUCHI Takashi (National Defense Academy of Japan)  
HUA Cheng (Fudan University)  
TAKASE Hiroshi (Kyushu University)  
JIANG Yu (Shanghai University of Finance and Economics)  
HASHIZUME Kenji (West Nippon Expressway Engineering Shikoku Company Limited)

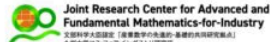
This workshop is held in person (face to face)

**JR Hakata City**  
〈9F Conference room (1)(2)〉



URL <https://joint.imi.kyushu-u.ac.jp/post-18943/>

E-mail [imikyoten@jimu.kyushu-u.ac.jp](mailto:imikyoten@jimu.kyushu-u.ac.jp)



## 申込方法

下記URLより参加登録をお願いいたします／

[参加登録フォーム](#)

概要	運営	2026年度公募	アクセス・お問合せ
概要	運営委員会	採択研究・報告書一覧	学内専用(トップページ)
活動報告	共同利用・共同研究委員会	イベント情報	委員専用
	国際プロジェクト委員会	会場設備	研究代表者専用
		Q&A	メールマガジン