

ISAMMDoF

**International Symposium on
Advanced Materials Having
Multi-Degrees-of-Freedom**

**November 1-2, 2012
100th Anniversary Memorial Hall,
Kumamoto University,
Kumamoto, JAPAN**

SCOPE

The scope of the symposium covers comprehensive researches on material science and technology for advanced materials having multi-DoF. The following topics will be discussed in this symposium.

- Molecular vibrational degrees-of-freedom (DoF)
- Electronic DoF of many-body effects in high density phase
- Multi-DoF in superionic conducting phenomena
- DoF in dynamic processes under high temperature and high pressure
- Internal magnetic DoF in magnetic phase transition
- Inter-molecular DoF in molecular aggregates
- Spectroscopy for multi-DoF (THz, fs, Synchrotron Radiation)
- Control methods of multi-DoF by using extreme conditions

URL: <http://pltop.shocomarec.kumamoto-u.ac.jp/ISAMMDoF/>

SESSIONS

- Oral presentations by invited speakers and young researchers
- Poster presentation accompanied with a short advertising oral talk

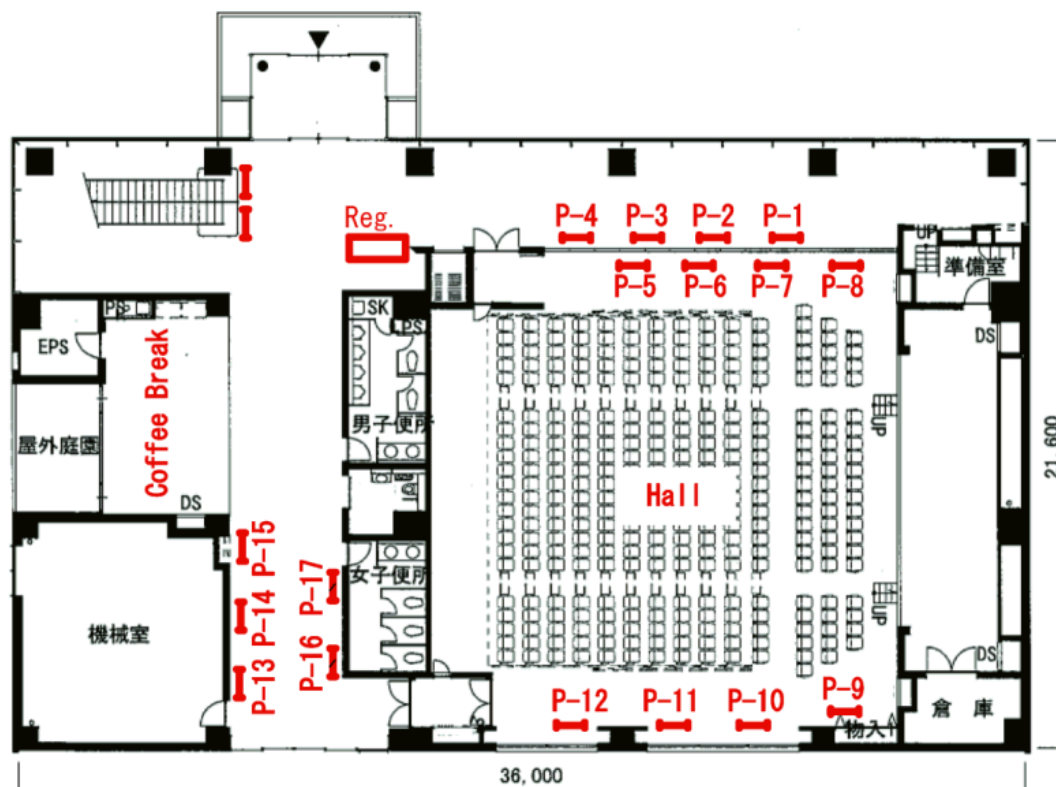
Thu, 1st Nov, 2012		
Registration	9:00~9:35	Lobby
Opening (I. Akai)	9:35~9:45	Hall
Session 1 (Chair: S.Hosokawa)	9:45~11:15	Hall
<i>Coffee Break</i>	11:15~11:30	Lobby
Session 2 (Char: T. Matsushita)	11:30~13:00	Hall
<i>Lunch Break</i>	13:00~14:15	
Session 3 (Char: M. Aniya)	14:15~16:00	Hall
<i>Coffee Break</i>	16:00~16:15	Lobby
Short presentation for poster	16:15~16:47	Hall
Photo	16:49~17:00	Hall
Poster presentation & Convivial gathering	17:00~18:30	Hall & Lobby
Informal (Casual) reception	19:30~	Downtown
Fri, 2nd Nov, 2012		
Session 4 (Chair: I. Akai)	9:00~10:30	Hall
<i>Coffee Break</i>	10:30~10:45	Lobby
Session 5 (Chair: C. Itoh)	10:45~12:30	Hall
<i>Lunch Break</i>	12:30~14:00	
Session 6 (Chair: F. Shimojo)	14:00~15:00	Hall
<i>Coffee Break</i>	15:00~15:15	Lobby
Session 7 (Chair: S. Ohmura)	15:15~16:30	Hall
Closing	16:30~16:40	Hall

VENUE

The technical sessions will be held in the 100th Anniversary Memorial Hall in Kumamoto University.

- Address:
Kumamoto University,
2-39-1 Kurokami Chuo-ku, Kumamoto 860-8555, Japan
URL: <http://ewww.kumamoto-u.ac.jp/>
- Access: See ACCESS MAP

FLOOR GUIDE (100th Anniversary Memorial Hall)



INSTRUCTION FOR PRESENTERS

- Invited talks :

Allotted time : 45 minutes (including the time for Q & A)

We will prepare a PC projector (SVGA: 1024x768). The presenters should approach the technical staff before the respective session to ensure that their own laptop PC could be correctly connected to the projector.

- Oral presentations ;

Allotted time : 15 minutes (including the time for Q & A)

We will prepare a PC projector (SVGA: 1024x768). The presenters should approach the technical staff before the respective session to ensure that their own laptop PC could be correctly connected to the projector.

- Poster presentations :

Short oral presentations are accompanied before the poster presentations.

Poster boards : 180H x 120W

Short oral presentations : Allotted time : 2 minutes (without Q & A)

The posters are to be hung with pins. Posters should stay on display during the symposium.

Presenting authors should submit an extended abstract. The extended abstract is requested to have two or more pages of A4 size and should include a summary less than 50-words. The format of the summary is free.

INVITED SPEAKERS

- Prof. Hyun-Tak Kim

"Universal law for Metal-Insulator Transition"

Center Head / Creative Research Center of Metal-Insulator Transition (MIT), Electronics & Telecommunications Research Institute (ETRI), Korea

- Prof. Zhongqing Wu

"The vibrational and thermodynamic properties of materials from first-principles calculation"

School of Earth and Space Sciences, University of Science and Technology of China, China

- Prof. Paulo S Branicio
"Atomistic simulations of mechanical behavior in nanocrystalline diamond and ceramics"
IHPC Independent Investigator Scientist, Materials Science and Engineering Institute of High Performance Computing, Singapore
- Prof. Piercarlo Mustarelli
"Review of modern solid state NMR applications to solid electrolytes"
Dipartimento di Chimica, University of Pavia, Italy
- Prof. Sergei Verbin
"Spin phenomena in quantum dots"
Spin Optics Laboratory, St. Petersburg University, Russia
- Prof. Jong Heo
"Optical Characteristics of Glasses with PbS Quantum Dots"
Photonic Glasses Laboratory, Department of Materials Science and Engineering, Pohang University of Science and Technology (POSTECH), Korea
- Prof. Andreas Josef Goldbach
"Palladium Alloys for Hydrogen Separation Membranes"
Dalian National Laboratory for Clean Energy, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China
- Prof. Han-III Yoo
"On the nature of positively-deviated defect structure of complex oxides"
Department of Materials Science and Engineering, Seoul National University, Korea
- Prof. Tetsuo Ogawa
"Cooperative phenomena in electron-hole and electron-hole-photon systems: Phase transition, crossover, and condensation"
Theoretical Condensed Matter Physics, Department of Physics, Graduate School of Science, Osaka University, Japan
- Prof. Tomohiro Matsushita
"Atomic resolution holography using X-ray fluorescence / photoelectrons and measurement control systems"
Japan Synchrotron Radiation Research Institute (JASRI), Spring-8, Japan
- Prof. Junpei Azuma
"Time-Resolved Photoemission Measurements Using Synchrotron Radiation and Laser"
Synchrotron Light Application Center, Saga University, Japan

ORGANIZING COMMITTEE

- Ichiro Akai (Chair), Shockwave & Condensed Matter Research Center, Kumamoto University, Japan
- Masaru Aniya, Graduate School of Science & Technology, Kumamoto University, Japan
- Fuyuki Shimojo, Graduate School of Science & Technology, Kumamoto University, Japan
- Shinya Hosokawa, Graduate School of Science & Technology, Kumamoto University, Japan

SPONSORS

- Kumamoto University
- Kumamoto University, Shockwave & Condensed Matter Research Center
- Kumamoto University, Graduate School of Science & Technology
- Kumamoto International Convention and Tourism Bureau

ACCESS MAP (DOWNTOWN ↔ KUMAMOTO UNIV.)

- Kumamoto University
URL: <http://www.kumamoto-u.ac.jp/about/access/>



Kumamoto University is located 2.2 km from the downtown (Touricho-suji, Suido-cho). City bus services (15 ~ 20 minutes) connect the university with the downtown.

- (A) Bus stop (Kumamoto Digaku Mae) from downtown
- (B) Bus stop (Kumamoto Digaku Mae) to downtown
- Downtown (Touricho-suji, Suido-cho)



- Hotel Nikko Kumamoto : Reserved hotel for invited speakers
URL: <http://www.jalhotels.com/domestic/kyusyuu/kumamoto/>
- (C) Bus stop (Touricho-suji):
Arrival bus stop for the highway-buses from Fukuoka airport (See pages 111, 112) and Aso Kumamoto airport (See pages 111, 113) and city bus services from Kumamoto university.
- (D) Bus stop (Touricho-suji):
Departing bus station of highway-buses bound for Fukuoka airport (See pages 111, 114, 115) and Aso Kumamoto airport (See pages 111, 116, 117, 118).
- (E) Bus stop (Touricho-suji)
Departing bus station of the city bus services bound for Kumamoto university.
Buses indicated with 子1, 子7, 子8, 子9, 子18 or 子20 go to Kumamoto university from this bus station. About 15~20 minutes for the university.
- Yamazakura (tentative) : Informal (Casual) reception on 1st Nov.

ISAMMDoF

IRVINDOPE

International Symposium on Advanced Materials Having Multi-Degrees-of-Freedom

<http://pltop.shocomarec.kumamoto-u.ac.jp/ISAMMDoF/>

1st ~ 2nd Nov. 2012

100th Anniversary Memorial Hall in
Kumamoto University,
Kumamoto JAPAN

An international symposium on material
science and technology for advanced
materials having *multi-degrees-of-freedom*
(DoF).

Thu, 1st Nov, 2012

• Registration	9:00~9:35	Lobby
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• Opening (I. Akai)	9:35~9:45	Hall
• Session 1 (Chair: S. Hosokawa)	9:45~	Hall
9:45~10:30	I-1	
Time-Resolved Photoemission Measurements Using Synchrotron Radiation and Laser		
Prof. Junpei Azuma, M. Watanabe ¹ , K. Takahashi, I. Yamamoto, M. Imamura, H. Sugiyama, K. Ogawa, M. Kamada		
<i>Synchrotron Light Application Center, Saga University</i>		
¹ <i>Department of Interdisciplinary Environment, Graduate School of Human and Environmental Studies, Kyoto University</i>		
10:30~11:15	I-2	
Atomic Resolution Holography Using X-Ray Fluorescence / Photoelectrons and Measurement Control Systems		
Prof. Tomohiro Matsushita		
<i>Japan Synchrotron Radiation Research Institute (JASRI), Spring-8,</i>		
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○ Coffee Break	11:15~11:30	Lobby
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• Session 2 (Chair: T. Matsushita)	11:30~	Hall
11:30~12:15	I-3	
Palladium Alloys for Hydrogen Separation Membranes		
Prof. Andreas J. Goldbach		
<i>Dalian National Laboratory for Clean Energy, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China</i>		
12:15~13:00	I-4	
Optical Characteristics of Glasses with PbS Quantum Dots		
Prof. Jong Heo		
<i>Photonic Glasses Laboratory, Department of Materials Science and Engineering, Pohang University of Science and Technology (POSTECH), Korea</i>		
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○ Lunch Break	13:00~14:15	
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● **Session 3 (Chair: M. Aniya)**

14:15~

Hall

14:15~15:00 **I-5**

On the Origin of Positive Deviation of the Defect Structure of Complex Oxides

Prof. Han-Il Yoo

Department of Materials Science and Engineering, Seoul National University, Korea

15:00~15:45 **I-6**

Review of Modern Solid State NMR Applications to Solid Electrolytes

Prof. Piercarlo Mustarelli

Dipartimento di Chimica, University of Pavia, Italy

15:45~16:00 **O-1**

Viscosities of Aqueous Trehalose with Borax System: Analysis Based on the Bond Strength-Coordination Number Fluctuation Model and the WLF Equation

Sahara^{1,2}, M. Aniya¹

¹*Graduate School of Science & Technology, Kumamoto University,*

²*Faculty of Science & Technology, State Islamic University (UIN), Indonesia*

○ *Coffee Break*

16:00~16:15

Lobby

● **Short presentation for poster**

16:15~

Hall

16:15~16:17 **P-1**

Influence of Intermolecular Interaction to Spin Crossover Property of Fe(III) Complexes with N₃O₂ Pentadentate Ligand

K. Murakami, T. Fujinami, N. Matsumoto

Graduate School of Science & Technology, Kumamoto University

16:17~16:19 **P-2**

Hydrogen Bonded Assembly Structures and Spin Equilibrium Behaviours of Fe^{III} Complexes with N₂O₂ Schiff Base Ligand and Two Imidazoles

M. Koike, T. Fujinami, N. Matsumoto, Y. Sunatsuki¹

Graduate School of Science & Technology, Kumamoto University,

¹*Department of Chemistry, Faculty of Science, Okayama University*

16:19~16:21 **P-3**

Carbonato-Bridged Ni₂Ln₂ Complex Generated by Atmospheric CO₂ Fixation

S. Sakamoto, H. Hagiwara, N. Matsumoto, Y. Sunatsuki¹

Graduate School of Science & Technology, Kumamoto University,

¹*Department of Chemistry, Faculty of Science, Okayama University*

16:21~16:23 **P-4**

Spontaneous Resolution and Luminescence Properties in the Solid States of Terbium(III) Complexes of Tripodal Ligand Containing Three Imidazole Groups and Acetate

M. Murase, S. Yamauchi, N. Matsumoto, M. Tsuchimoto¹

Graduate School of Science & Technology, Kumamoto University,

¹*Department of Chemistry, Chiba Institute of Technology*

16:23~16:25 **P-5**

Assembly Structures of Eu(III) Complexes of Tridentate Ligands Containing Imidazole and Amino Acid

S. Yamauchi, N. Matsumoto, M. Tsuchimoto¹

Graduate School of Science & Technology, Kumamoto University,

¹*Department of Chemistry, Chiba Institute of Technology*

16:25~16:27 **P-6**

Observation of Raman Ramsey Fringes in Na Vapor

I. Yoshida, N. Hayashi, K. Fujita, S. Taniguchi, Y. Hoshina, M. Mitsunaga

Graduate School of Science & Technology, Kumamoto University

16:27~16:29 **P-7**

Temperature Dependency of the Elastic Properties of High Ag Ion Conductors with the NaCl Structure

H. Sadakuni, M. Aniya

Graduate School of Science & Technology, Kumamoto University

16:29~16:31 **P-8**

Analysis of Elastic Properties of Metal Borohydrides and Metal Alanates

Y. Noguchi, M. Aniya

Graduate School of Science & Technology, Kumamoto University

16:31~16:33 **P-9**

Raman Scattering Study on Thermochromism of Poly 5,7-Dedecadene-1,12-Diole Bis[Di-fluorophenyl Carbamate] Thin Films

S. Okamoto, C. Itoh

Department of Material Science & Chemistry, Wakayama University

16:33~16:35 **P-10**

Micro-Photoluminescence Spectroscopy of Single Thiophene/Phenylene Co-Oligomer Nanoneedle Crystals

K. Bando, T. Takano, H. Fujii, T. Nakano, D. Makino, S. Kumeta, F. Sasaki¹, S. Hotta²

Department of Physics, Faculty of Science, Shizuoka University,

¹*Photonics Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba,*

²*Department of Macromolecular Science and Engineering, Kyoto Institute of Technology, Kyoto*

16:35~16:37 **P-11**

Excitonic Diffusion Processes in L_z -Gradient Quantum Well under High Density Excitation

S. Konishi, Y. Yoshizaki, K. Iwamitsu, T. Shimamoto¹, A. Fujii¹, I. Akai¹

Graduate School of Science & Technology, Kumamoto University,

¹*Shockwave & Condensed Matter Research Center, Kumamoto University*

16:37~16:39 **P-12**

Thickness Dependence of Excitonic Spectra in Cu_2O Thin Films Sandwiched by MgO Substrates

S. Aihara, K. Iwamitsu, T. Shimamoto¹, A. Fujii¹, I. Akai¹

Graduate School of Science & Technology, Kumamoto University,

¹*Shockwave & Condensed Matter Research Center, Kumamoto University*

16:39~16:41 **P-13**

Coherent Phonons in *trans*-Stilbene Single Crystals

Y. Yoshizaki, K. Yamashiro, T. Shimamoto¹, A. Fujii¹, I. Akai¹

Graduate School of Science & Technology, Kumamoto University,

¹*Shockwave & Condensed Matter Research Center, Kumamoto University*

16:41~16:43 **P-14**

Optical Spectra of Light-Harvesting Antenna Component Molecules and Their Temperature Dependence

S. Torihara, Y. Nakamura, K. Iwamitsu, Y. Yoshizaki, T. Shimamoto¹, A. Fujii¹, I. Akai¹

Graduate School of Science & Technology, Kumamoto University,

¹*Shockwave & Condensed Matter Research Center, Kumamoto University*

16:43~16:45 **P-15**

Molecular-Dynamics Study of Thermal Stability of Double-Layer Armchair-Edged Graphene Nanoribbons

Rizal Arifin, F. Shimojo

Graduate School of Science & Technology, Kumamoto University

16:45~16:47 **P-16**

Ultrafast Time-Resolved Photoluminescence Spectroscopy by an Optical Kerr Gate Method

S. Ichigozaki, N. Hatada, T. Iwasaki, Y. Yoshizaki, K. Iwamitsu, A. Fujii¹, I. Akai¹

Graduate School of Science & Technology, Kumamoto University,

¹*Shockwave & Condensed Matter Research Center, Kumamoto University*

16:47~16:49 **P-17**

Cooperative Motions and Translational Diffusivity of Glass-Forming Liquids and Ionic Liquids with Lithium Salts

M. Ikeda, M. Aniya¹

Course of General Education, Natural Science, Appl. Phys., Fukui National College of Technology

¹*Graduate School of Science & Technology, Kumamoto University*

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| ● Photo | 16:49~17:00 | Hall |
| ● Poster presentation & Convivial gathering | 17:00~18:30 | Hall & Lobby |
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| ● Informal (Casual) reception | 19:30~ | Downtown |
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Fri, 2nd Nov, 2012

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| ● Session 4 (Chair: I. Akai) | 9:00~ | Hall |
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9:00~9:15 **O-2**

Excitonic Spectra of Cu₂O Thin Films Sandwiched by MgO Plates

K. Iwamitsu, S. Aihara, T. Shimamoto¹, A. Fujii¹, I. Akai¹

Graduate School of Science & Technology, Kumamoto University

¹*Shockwave & Condensed Matter Research Center, Kumamoto University*

9:15~9:30 **O-3**

Characteristics of YBa₂Cu₃O_{7-x} Thin Film Prepared by Shock-Compacted YBa₂Cu₃O_{7-x} Bulk

Y. Kim, T. Sueyoshi¹, K. Tsuchiya¹, I. Akai

Shock Wave & Condensed Matter Research Center, Kumamoto University,

¹*Graduate School of Science & Technology, Kumamoto University*

9:30~9:45 **O-4**

Time-Resolved Fourier Transform Infrared Spectroscopy: an Application to Photo-Induced Phase Transition in TTF-CA Crystal

C. Itoh, A. Nagahori

Department of Material Science & Chemistry, Wakayama University

9:45~10:30 **I-7**

Cooperative Phenomena in Electron-Hole and Electron-Hole-Photon Systems: Phase Transition, Crossover, and Condensation

Prof. Tetsuo Ogawa

Theoretical Condensed Matter Physics, Department of Physics, Graduate School of Science, Osaka University

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| ○ Coffee Break | 10:30~10:45 | Lobby |
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| ● Session 5 (Chair: C. Itoh) | 10:45~ | Hall |
|-------------------------------------|--------|------|

10:45~11:30 **I-8**

Spin Phenomena in Quantum Dots

Prof. Sergei Verbin

Spin Optics Laboratory, St. Petersburg University, Russia

11:30~12:15 **I-9**

Carrier-Driven Mott transition and Metamaterial in VO₂

Prof. Hyun-tak Kim

Center Head / Creative Research Center of Metal-Insulator Transition (MIT), Electronics & Telecommunications Research Institute (ETRI), Korea

12:15~12:30 **O-5**

Various Spin States, Structural Distortion and Molecular Aggregates of Iron(II) Complexes with Imidazole Containing Tridentate Ligand Arising from Their Surroundings with Intermolecular Hydrogen Bonds

H. Hagiwara, N. Matsumoto, Y. Sunatsuki¹

Graduate School of Science & Technology, Kumamoto University,

¹*Department of Chemistry, Faculty of Science, Okayama University*

○ *Lunch Break*

12:30~14:00

● **Session 6 (Chair: F. Shimojo)**

14:00~

Hall

14:00~14:45 **I-10**

Atomistic Simulations of Mechanical Behavior in Nanocrystalline Diamond and Ceramics

Prof. Paulo S. Branicio

IHPC Independent Investigator Scientist, Materials Science and Engineering Institute of High Performance Computing, Singapore

14:45~15:00 **O-6**

Coulomb Explosion of Bromo Aromatic Molecules: an *ab initio* Molecular Dynamics Simulation

S. Ohmura, K. Nagaya, F. Shimojo¹, M. Yao

Department of Physics, Kyoto University,

¹*Graduate School of Science & Technology, Kumamoto University*

○ *Coffee Break*

15:00~15:15

Lobby

● **Session 7 (Chair: S. Ohmura)**

15:15~

Hall

15:15~16:00 **I-11**

The Vibrational and Thermodynamic Properties of Materials from First-Principles Calculation

Prof. Zhongqing Wu

School of Earth and Space Sciences, University of Science and Technology of China, China

16:00~16:15 **O-7**

Reaction of Ethylene Molecules with a Nickel Cluster: *ab initio* Molecular Dynamics Simulations

K. Shimamura, Y. Shibuta¹, S. Ohmura², F. Shimojo, S. Yamaguchi¹

Graduate School of Science & Technology, Kumamoto University,

¹*Department of Materials Engineering, The University of Tokyo,*

²*Department of Physics, Kyoto University*

16:15~16:30 **O-8**

Ab initio Molecular-Dynamics Study of Dynamic Asymmetry of Self-Diffusion in Liquid ZnCl₂ under Pressure

A. Koura, S. Ohmura¹, F. Shimojo

Graduate School of Science & Technology, Kumamoto University,

¹*Department of Physics, Kyoto University*

● **Closing (M. Aniya)**

16:30~16:40

Hall

AIRPORTS Informations

NARITA Airport (NRT)

<http://www.narita-airport.jp/en/index.html>

- Terminal 1 (http://www.narita-airport.jp/en/guide/index_t1.html)
 - North Wing : Alitalia (AZ), 4F:Check-in
- Terminal 2 (http://www.narita-airport.jp/en/guide/index_t2.html)
 - Emirates (EK, 3F:Check-in), Japan Airlines (JL, 1F:Domestic Check-in)
- BUS Services: NARITA Airport → HANEDA Airport (Airport Limousine : <http://www.limousinebus.co.jp/en/>)
 - Terminal 1 : Bus Stop Number 3 (North Wing), 12 (South Wing)
 - Terminal 2 : Bus Stop Number 5 (North), 15 (South)

<http://www.narita-airport.jp/en/access/bus/index.html>

HANEDA Airport (HND)

<http://www.haneda-airport.jp/en/>

- International Terminal (<http://www.haneda-airport.jp/inter/en/>)
 - Korean Air (KE)
- Domestic Terminal Terminal 1, South (<http://www.tokyo-airport-bldg.co.jp/en/>)
 - Japan Airlines (JL) bond for Kyushu
- BUS Services: HANEDA Airport → NARITA Airport (Airport Limousine : <http://www.limousinebus.co.jp/en/>)
 - International Terminal 1F : Bus Stop Number 5
 - Terminal 1 South 1F : Bus Stop Number 7
 - Terminal 2 South 1F : Bus Stop Number 7

http://www.limousinebus.co.jp/en/bus_services/narita/haneda.html

FUKUOKA Airport (FUK)

http://www.fuk-ab.co.jp/english/frame_index.html

- International Terminal
 - Korean Air (KE), Air China (CA), Singapore Airlines (SQ), Japan Airlines (JL: International)
- Terminal 2 (Domestic)
 - Japan Airlines (JL), bound for Tokyo, Narita
- BUS Services: FUKUOKA Airport → Kumamoto (Time table: See page 112)
 - International Terminal : Bus Stop Number 3
 - Terminal 2 : Bus Stop Number 3
 - Terminal 3 : Bus Stop Number 2

ASO KUMAMOTO Airport (KMJ)

<http://www.kmj-ab.co.jp/eng/index.html>

- Domestic Terminal : All airlines in domestic flight services.
http://www.kmj-ab.co.jp/eng/terminal_domestic_map.html
- BUS Services: ASO KUMAMOTO Airport → Downtown (Time table: See page 113)
 - Domestic Terminal : Bus Stop Number 2