HeKKSaGOn

GERMAN-JAPANESE UNIVERSITY NETWORK

HeKKSaGOn Working Group

Seeds in Mathematics versus Needs outside Mathematics

Winter School in Osaka 2017

DATE : March 2nd – 12th , 2017

PLACE : OSAKA University (Sigma Hall in *Toyonaka Campus*)

Program :

Σ Hall, Graduate School of Engineering Science, Osaka University

Thursday, March 2, 2017

18:00 Arrival and Reception (Buffet at Sigma hall)

Friday, March 3, 2017

10:00 Welcome and Openings

10:10-10:40 Key Note Lecture Hisashi Tanizaki (Vice Director, MMDS)
"Introduction to Center for Mathematical Modeling and Data Science (MMDS)"

11:00-11:30 Visiting Lab. (Prof. Ishiguro)

12:20 Departure for Suita Campus (Micro-bus)

13:00-13:40 Lunch (Restaurant Minerva in Suita Campus)

14:00-14:30 Cyber Media Center

15:00-15:30 Vice President (Prof. Yamanaka)

Saturday, March 4, 2017

Special Lectures from MMDS

10:00-10:40 Yoshihisa Miyanishi
"Real eigenvalues of non-self adjoint operators : From new materials to Riemann zeta function"

10:50-11:30 Seiya Kuno
"Optimal execution problem and characterization of LOB"

13:30- Excursion (Banpaku Kinen Koen)

Sunday, March 5, 2017

Off

Monday, March 6, 2017

10:00-10:50 Lecture A. Gudrun Thaeter (Karlsruhe Inst. Tech.)
"Natural Convection — approximations and applications"

11:00-11:50 Lecture B. Hans Knüpfer (Heidelberg Univ.)
"Magnetic Domains in Thin Ferromagnetic Films with Strong Perpendicular Anisotropy"

12:00-13:30 Lunch Break

13:30-14:10 Tutorial Hajime Koba (Osaka Univ.)
"Energetic variational approaches for PDEs"

14:20-15:00 Special Sessions I (2)

Shoichi Hasegawa (Tohoku Univ.)

"Classification of radial solutions to a weighted semilinear elliptic equation on the hyperbolic space"

Nicolai Schoch (Heidelberg Univ.)

"Towards Cognition-Guided Patient-Specific Numerical Simulation for Cardiac Surgery Assistance"

15:10-15:40 Tea Break

15:50-16:00 Short Communications (1)

Kenshiro Tashiro (Kyoto Univ.)

"Word metric on the Heisenberg group and its horofunction boundary"

Tuesday, March 7, 2017

10:00-10:50 Lecture C. Noboru Chikami (Tohoku Univ.)

"Some functional inequalities in Fourier-Herz spaces and applications to the Navier-Stokes system"

10:50-11:50 Special Sessions II (3)

Haruki Umakoshi (Osaka Univ.)

"Asymptotic Behavior of Reaction Diffusion Systems with Reversible Mass-action Kinetic"

Kazuyuki Tsuda (Fukuoka Inst. Tech.)

"Time periodic problem for the compressible Navier-Stokes equation on the whole space"

Yohei Toyota (Osaka Univ.)

"On the compactness of the embedding $H_0^1(¥Omega) ¥hookrightarrow L^{q(¥cdot)}(¥Omega)$

12:00-13:30 Lunch Break

13:30-14:20 Lecture D. Stephan Huckemann (Goettingen)

"Different Names for the Same: The Expected Value and the Barycenter"

14:30-15:00 Tea Break

15:10-16:10 Statistics Meets Geometry I (2)

Daniel Luckhardt (Goettingen Univ.)

"Thermodynamical limit and testability of Characteristic numbers"

Robin Richter (Goettingen Univ.)

"A Biometric Application: Measuring the Quality of a Fingerprint"

Wednesday, March 8, 2017

10:00-10:50 Statistics Meets Geometry II (2)

Benjamin Eltzner (Goettingen Univ.)

"Using the Bootstrap for M-Estimator Hypothesis Testing"

Yoshikazu Terada (Osaka Univ.)

"Possibilities and limitations of machine learning on unweighted graphs

~ From the viewpoint of random geometric graphs ~"

11:00-11:50 Round Table Discussions

12:00-13:30 Lunch Break
13:30-14:00 Visiting Lab. (Prof. Naota)
14:10-14:40 Visiting Lab. (Prof. Arai)
15:00-18:00 Social Event (downtown Osaka)

Thursday, March 9, 2017

10:00-10:40 Tutorial
Fernando Galaz-Garcia (Karlsruhe Inst. Tech.)
"Geometry of conjugate and cut points I"
10:50-11:50 Statistics Meets Geometry III (2)
Hendrikje Pauer (Karlsruhe Inst. Tech.)
"Differential Geometry and Robotics - Fiber-Bragg-Grating Based Shape Sensing"
Fernando Galaz-Garcia (Karlsruhe Inst. Tech.)
"Geometry of conjugate and cut points II"
12:00-13:30 Lunch Break
13:30-14:30 Geomety I (3)
Takayuki Masuda (Osaka Univ.)
"Combination of affine Lorentzian isometries"
Masahiro Morimoto (Kyoto Univ.)
"Representations of Compact Lie Groups and Transversally Elliptic Operators"
Taiki Yamada (Tohoku Univ.)
"Generalized curvature dimension inequalities on graphs"
14:40-15:10 Tea Break
15:20-16:00 Geometry II (2)
Ryosuke Mineyama (Osaka Univ.)
"On fibered commensurability on $¥mathrm{Out}(F_{n})$"
Doman Takata (Kyoto Univ.)
"Infinite dimensional manifolds and noncommutative geometry"

Friday, March 10, 2017

10:00-10:40 Tutorial
Takashi Suzuki (Osaka Univ.)
"TBA"
10:50-11:50 Mathematical Biology I (3)
Dhisa Minerva (Osaka Univ.)
"TBA"
Naoya Hatanaka (Osaka Univ.)
"A mathematical model of NF- κ B canonical pathway considering phosphorylation"

Kurumi Hiruko (Tohoku Univ.)

"Stable control in a hybrid PDE-ODE system describing intermittent hormonal therapy for prostate cancer"

12:00-13:30 Lunch Break

13:30-14:50 Mathematical Biology II (4)

Clair Poignard (Bordeaux Univ.)

"Towards numerics for clinical electroporation ablation of liver tumors"

Thomas Michel (Versailles Univ.)

"Calibration of a Partial Differential Equations model for Tumor Spheroids growth"

Marcel Mohr (Heidelberg Univ.)

"Mathematical modelling of plasma cell dynamics in multiple myeloma"

Thomas Stiehl (Heidelberg Univ.)

"How mathematical models help to understand clonal dynamics in blood cancer"

15:00-15:30 Tea Break

15:40-16:10 Short Communications by Poster Presenters

Taisuke Nomura (Osaka Univ.)	"Mixed FEM on the brain magnetic field problem and the validity of approximate elements"
Yusuke Inagaki (Osaka Univ.)	"On SL(n)-representations of fundamental groups of low-dimensional manifolds"
Katsuhiro Miguchi (Osaka Univ.)	"Transformation between shearing coordinates and geodesic length coordinates"
Olivier Gallinato (Bordeaux Univ.)	"Free boundary problem for cell protrusion"
Karla Perez (Karlsruhe)	"Spaces and moduli spaces of Riemannian metrics and fiber bundles"
Jan-Bernhard Kordass (Karlsruhe)	"Moduli spaces of riemannian metrics satisfying curvature conditions"
Diego Corro (Karlsruhe)	"Classification of low-dimensional Riemannian manifolds with foliations by Tori"
Chris Kowall (Heidelberg Univ.)	"Shadow limit approximation"
Jun Sakamoto (Osaka Univ.)	"TBA"
Sho Matsuzawa (Osaka Univ.)	"TBA"
Suguru Otani (Osaka Univ.)	"Preference Exploring in sparse situation"
Feminin Franco-Medrano (Kyushu Univ.)	"TBA"
Somchai Nuanprasert (Osaka Univ.)	"TBA"
Kenji Hatakenaka (Osaka Univ.)	"TBA"
James Write (IES)	"Basins of attraction for nonlinear ODEs with a time-dependent parameter"

16:20-17:20 Poster Session

17:40-18:00 Awards, Closing

Saturday, March 11, 2017

18:00-20:00 Farewell Party (Cafeteria in Toyonaka Campus ⑰ (See Toyonaka Campus map))

Sunday, March 12, 2017

Departure

Notes on Presentation

① 50 ～ 10 minutes' talk

We prepare Windows PC, projectors, laser pointers and two white boards.

Please illustrate a lecture with slides (pdf or powerpoint format).

If you would like to use MAC, please bring the VGA adaptor or copy the data to USB memory.

② Poster session

Poster presentation session will be held on March 10.

Please put up your poster about noon of the day.

The poster should meet the following criteria:

TITLE

You have to include the title and your name on your poster.

SIZE

The poster must be no less than A1 and no larger than A0 size (AO size is 841mm x 1189mm).

Orientation of your poster must be in portrait style.

SHORT COMMUNICATION (15:40-16:10)

You have two minutes before the poster session.

In the lecture room, you will give a short presentation USING PROJECTOR.

You had better prepare the short slide file (pdf or powerpoint format).

Please bring it with you to present it at the reception on March 10.

Organizers

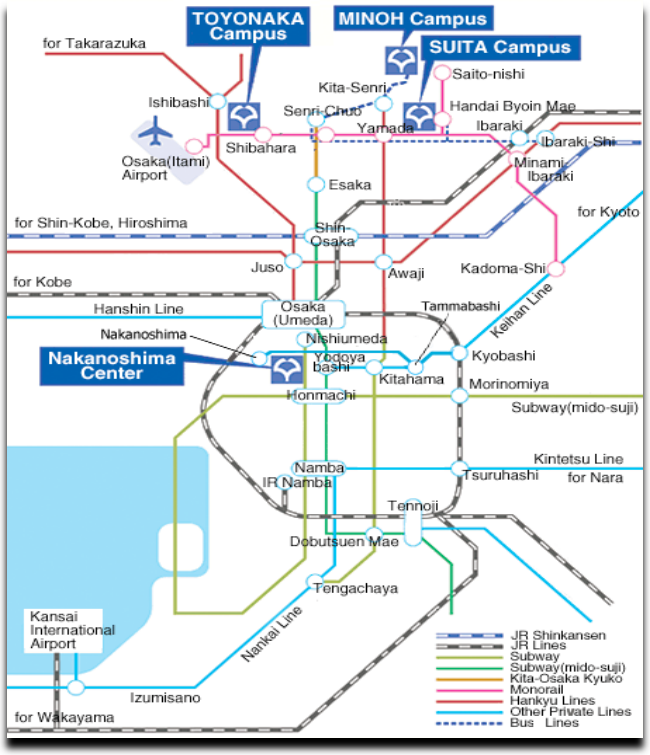
Takashi Suzuki, Ken'ichi Ohshika (Osaka Univ.)　Wilderich Tuschmann (Karlsruhe Inst. Tech.)

Advisory Board

Takashi Shioya (Tohoku Univ.)　Tsuyoshi Kato (Kyoto Univ.)

Stephan Huckemann (Goettingen Univ.)　Anna Marciniak-Crochara (Heidelberg Univ.)

Access Map (Toyonaka Campus)



- **From Osaka Airport (Itami)**

  Monorail to **Shibahara**. (30')

- **From Kansai International Airport** (3 choices)

  (1) *JR line* to **Osaka**, → subway *Midosuji Line*, exit at **Senri-Chuo**, → *Monorail*, exit at **Shibahara**. (2 hr.)

  (2) *Nankai Line* to **Namba**, → *Midosuji Line* subway, exit at **Senri-Chuo**, → *Monorail* to **Shibahara**. (2 hr.)

  (3) *Airport Bus* to **Osaka Airport,** → *Monorail*, exit at **Shibahara**. (2 hr., 30')

- **From Shin-Osaka Station**

  Subway *Midosuji Line (Kita-Osaka Kyuko Line)* to **Senri-Chuo**, → Monorail, exit at **Shibahara**. (1 hr.)

Toyonaka Campus (Sigma Hall)

Convenience Store

MMDS
I Building 2nd floor

Shibahara station

Restaurants in Toyonaka Campus

50: (Weekday) 11:00～19:00, (Sat) 11:00～14:00

77: (Weekday, Sat) 11:00～14:00

32: (Weekday, Sat) 10:30～17:00

82: (Weekday, Sat) 8:30～20:00

80: (Weekday) 11:00～14:00

Map around Toyonaka Campus

Ishibashi

There are lots of shops besides restaurants near Ishibashi.

Convenience Store

Sigma Hall

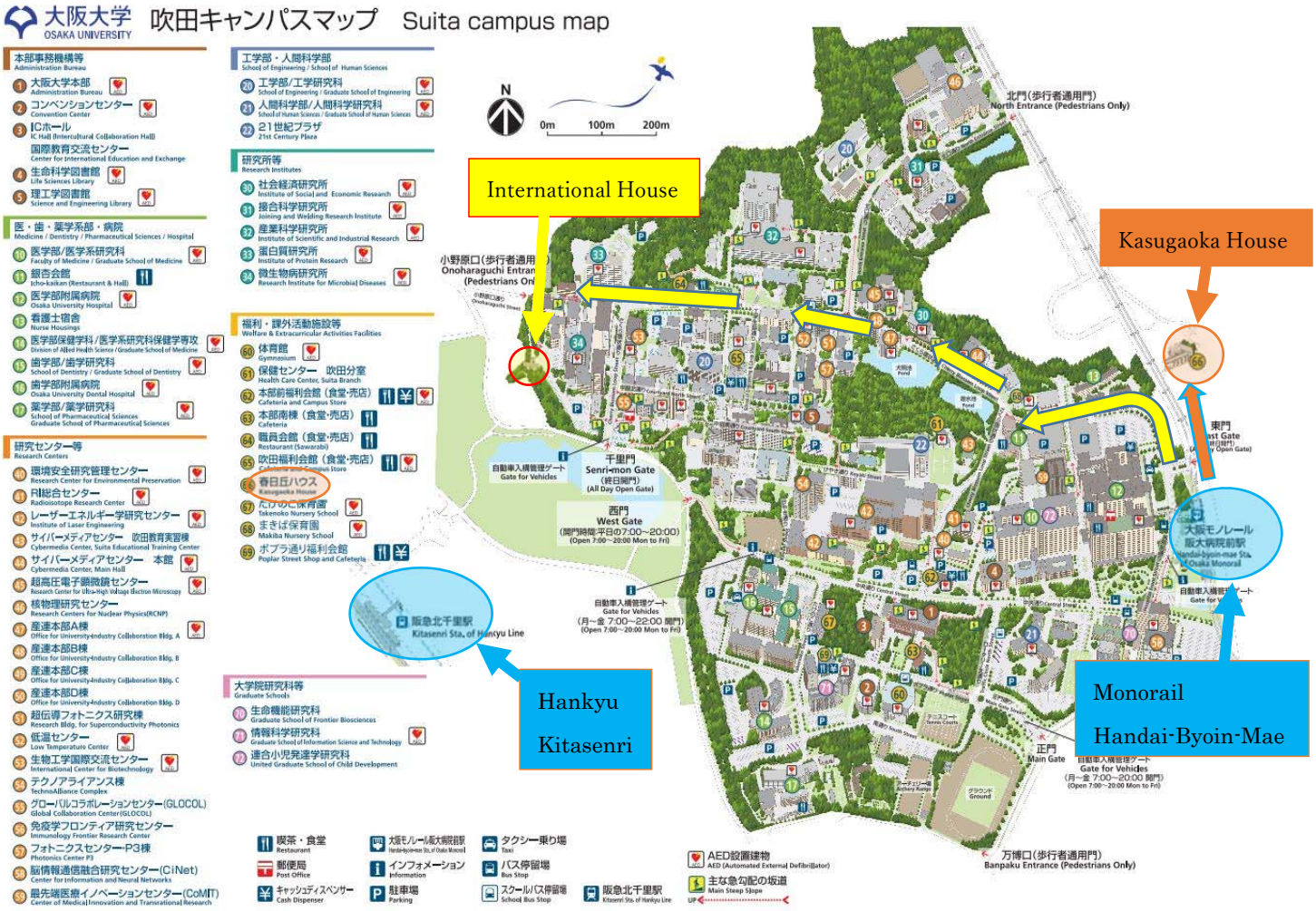
Shibahara

Restaurant

Restaurant

Suita Campus (Kasugaoka House and International House)

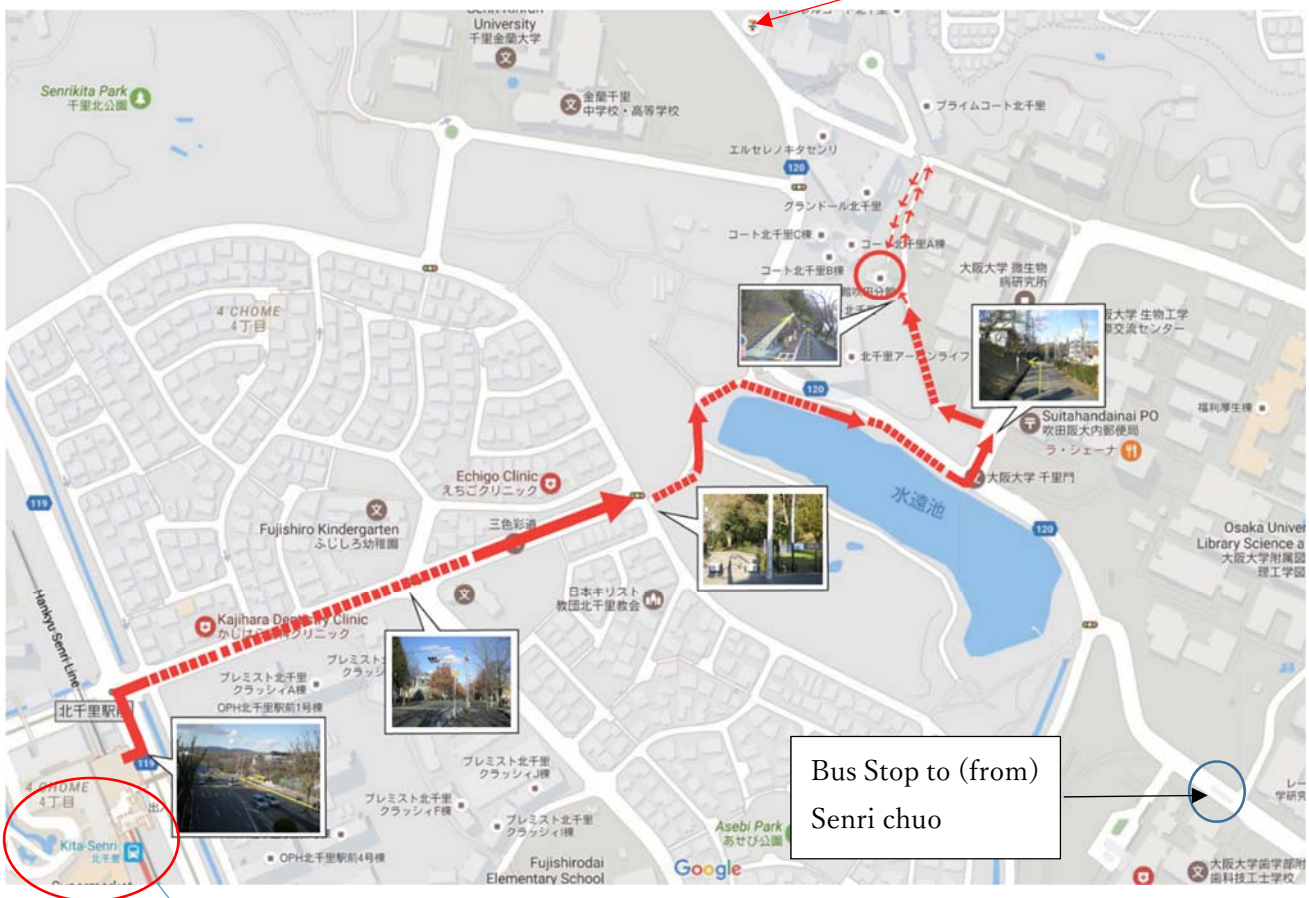
- **From Osaka Airport (Itami)**
  Monorail to Handai-Byoin-Mae. (1 hr.)
- **From Kansai International Airport (3 choices)**
  (1) JR line to Osaka, → subway Midosuji Line, exit at Senri-Chuo, → Monorail, exit at Handai-Byoin-Mae. (2 hr.)
  (2) Nankai Line to Namba, → subway Midosuji Line to Senri-Chuo, → Monorail to Handai-Byoin-Mae. (2 hr.)
  (3) Airport Bus to Osaka Airport, → Monorail to Handai-Byoin-Mae. (2 hr. 30')
- **From Shin-Osaka Station**
  Subway Midosuji Line to Senri-Chuo, → Monorail. Exit at Handai-Byoin-Mae. (1 hr.)



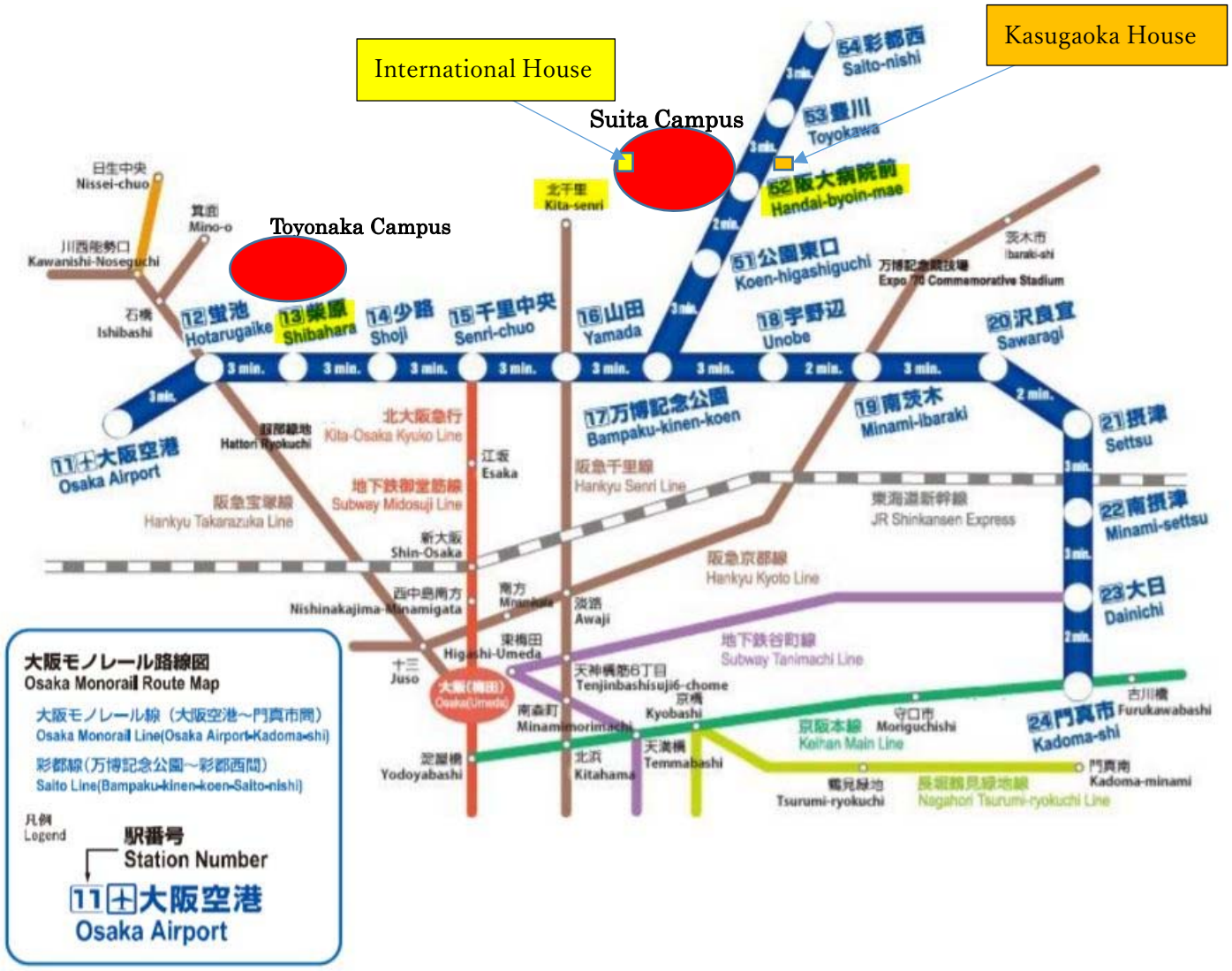
The route to Kasugaoka House and International House (Suita Campus)

From Monorail Handai-Byoin-Mae station

From Hankyu Kitasenri station (to International House)



Osaka Monorail Route Map (Supplementary information)



Toyonaka Campus ⇆ Suita Campus ((1) ¥370 ,(2) ¥440)

(1) Monorail **Shibahara** ⇆ Monorail **Bampaku-Kinen-Koen** ⇆ Monorail **Handai Byoin Mae**

(Transfer the Monorail on the opposite side of the same platform)

¥370 (20 minutes)

(2) Monorail **Shibahara** ⇆ Monorail **Yamada** ¥290 (10 minutes)

(transfer the train. 5 minutes on foot)

Hankyu **Yamada** ⇆ Hankyu **Kitasenri** ¥150 (3 minutes)

Accommodation

Note! Participants who lodge in **Kasugaoka House** or **International House** receive the room key at the reception desk in Σ Hall (Toyonaka Campus).

① **Kasugaoka House (Suita Campus)**

Note! We hand over your room key directly at the reception desk in Σ Hall (Toyonaka Campus).

Nearest Station : **Handai-byoin-mae** (*Monorail*) 5 minutes on foot

Check out: Please keep your key until you leave on the final day.

When checking out, please hand your room key over to the caretaker of Kasugaoka House.

Staff Room (7:00～21:00)

+81- (0)72-626-6228

Emergency (If you lose or leave your key)

+81- (0)6 - 6268 - 1288

② **International House (Suita Campus)**

Note! We hand over your room key directly at the reception desk in Σ Hall (Toyonaka Campus).

Nearest Station : Handai Byoin Mae (Monorail) 20 minutes on foot

: Kitasenri (Hankyu) 15 minutes on foot

Check out: Please keep your key until you leave on the final day.

When checking out, please insert your room key in the BOX near the front. (Check out time 10:00)

Staff Room (10:00～16:00 Weekday only)

+81- (0)6 - 6879- 7142

Emergency

+81- (0)6 – 6268- 1288

Links

HeKKSaGon Program
http://www.osaka-u.ac.jp/ja/international/action/network/files/HeKKSaGOn_Winter_School_OU.pdf

Osaka University
http://www.osaka-u.ac.jp/en/index.html

Access maps
Osaka University Access Map
http://www.osaka-u.ac.jp/en/access/

Toyonaka Campus Access Map (Σ Hall)

http://www.es.osaka-u.ac.jp/en/access.html

Suita Campus Map
http://www.osaka-u.ac.jp/en/access/suita

Time table of Bus (Kansai Airport ⇔Itami Airport)

http://www.okkbus.co.jp/en/timetable/kix/t_itm.html

Accommodations
Kasugaoka House
http://www.osaka-u.ac.jp/en/academics/facilities/BandB/kasugaoka_house

International House
http://www.osaka-u.ac.jp/en/international/inbound/support/residence.html#interhouseS

Machikaneyama Facility
http://www.osaka-u.ac.jp/en/academics/facilities/BandB/staff_facility/machikane_facility

Emergency contact details
Center for Mathematical Modeling and Data Science, Osaka University
E-mail: mmds-questions@sigmath.es.osaka-u.ac.jp
Web: http://www-mmds.sigmath.es.osaka-u.ac.jp/
TEL: +81-(0)6-6850-6091 (10:30-18:00 weekday only)