



**20th International Symposium on  
LASER-AIDED PLASMA DIAGNOSTICS**  
Kyoto Garden Palace Hotel, Kyoto, Japan, September 10 – September 14, 2023



April 12<sup>th</sup> 2023

Dear Colleagues:

With this fourth announcement, we invite you to participate in the 20th International Symposium on Laser-Aided Plasma Diagnostics (LAPD20). This Symposium is being organized jointly by the National Institute for Fusion Science and Hokkaido University, and will take place from Sunday, 10<sup>th</sup> September 2023 to Thursday, 14<sup>th</sup> September 2023 at Kyoto Garden Palace Hotel (<https://www.hotelgp-kyoto.com/english/>), Kyoto, Japan. Website for the abstract submission and hotel reservation will be opened May 1<sup>st</sup> 2023.

The LAPD20 Symposium is a continuation of the biennial series that began at Kyushu University in 1983 (the source of the logo for the symposium). It brings together physicists and chemists from different disciplines in various laser-based plasma diagnostic areas, such as laser physics, low-temperature plasma chemistry and physics, and the physics of nuclear fusion. The symposium is a unique and fruitful meeting for cross-pollination between these fields. The symposium covers all diagnostics aided by electromagnetic waves (lasers and microwaves) applied to fusion plasmas, industrial process plasmas, environmental plasmas, plasmas for medical applications, atmospheric plasmas, plasmas in liquids and other plasma applications. Hardware developments related to laser-aided plasma diagnostics are also welcome.

LAPD20 was originally scheduled in 2021, however, due to the COVID pandemic, the symposium is postponed until 2023. The COVID restriction in Japan will be lifted in May 2023. Normal in person meeting becomes possible in Japan. However, in order to enter Japan, presently (28<sup>th</sup> March 2023), the certification of 3 doses COVID vaccination is necessary. If you have not finished 3 doses vaccination, you need to show COVID negative certification within 72 hours before you boarding to Japan. Presently, entry from China requires COVID negative certification. Everybody needs to register by “Visit to Japan (<https://vjw-lp.digital.go.jp/en/>)”. More detail information for the entry to Japan is posted in LAPD20 website (<https://lapd20.nifs.ac.jp/>).

***Abstract submission***

An abstract is required for each presentation. Please use the Word template (available at the LAPD20 website after 1 May 2023), then submit your abstract (in PDF form) via the website. The deadline for abstract submission is 16<sup>th</sup> June 2023. Contributed papers will take the form of either oral or poster presentations. Poster presentations will be accompanied by a very short oral introduction. A prize will be given for the best poster presented by a young scientist. The invited speakers (listed below) are also requested to submit abstracts.

***Symposium Proceedings***

The proceedings of the LAPD20 Symposium will be published in a special issue of the Journal of Instrumentation (JINST). All invited speakers and accepted presenters (oral or poster) are encouraged to submit their original papers to this special issue. Publication will be free of charge. All submissions to the proceedings will undergo the normal peer-review process, in accordance with the rules of the journal. The deadline for manuscript submission is the 1<sup>st</sup> September 2023. This deadline, prior to the conference, is necessary to allow the reviewing process to start during the conference. Further information about the manuscript submission process will be sent to abstract authors, and also posted on LAPD20 website.

***Invited Speakers***

International Scientific Committee has selected the following invited speakers.

*Akazaki Lecture*

George Vayakis		ITER	Laser diagnostics for Fusion Device
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*20<sup>th</sup> Anniversary Honorary Talk*

Katsunori Muraoka	Professor Emeritus of Kyushu University	History of LAPD and review of laser diagnostics for low temperature plasma
Tony Donné	EUROfusion	Review of laser diagnostics in high temperature plasma

*General Lectures*

Arthur Dogariu	Princeton U	Ultrafast advanced diagnostics for gases and plasmas
Shurik Yatom	PPPL	Diagnostics of plasma-liquids systems: challenges and their mitigation
Daniel Korneev	ELVA-1 company	Microwave source/detector developments for plasma diagnostic
Stefano Coda	EPFL	Tangential viewing phase contrast imaging for turbulence measurements
Hakaru Mizoguchi	Gigaphoton Inc./Kyushu University	Past experiences in optical lithography, the present national project on EUVL, and future plans beyond EUVL, along with optical/laser-aided diagnostics for each performance improvement
Jacob Brunner	IPP- Greifswald	Laser aided diagnostics for the next campaign of W7-X
Uwe Czarnetzki	Ruhr University Bochum	Laser Spectroscopy on Low-Temperature Plasmas: Where are we going?
Tsuyohito Ito	University of Tokyo	Electric-field-induced coherent anti-Stokes Raman scattering in visible region for sensitive measurements in near-atmospheric-pressure environment
Peter Bruggeman	University of Minnesota	Diagnostics of atmospheric pressure plasmas: recent progress and challenges

*Topical Lectures*

Earl Scime	West Virginia University	Thomson Scattering Measurements of Electron Velocity Distribution Functions during Magnetic Reconnection in PHASMA
Hazel Lowe	Tokamak Energy	First Thomson scattering data for ST40
Daniel den Hartog	University of Wisconsin-Madison	Next steps in high-repetition rate laser development for Thomson scattering
Yuki Inada	Saitama University	1D distribution measurement of electric field in streamer discharge by EFISH
Wonho Choe	KAIST, S. Korea	LIF measurements for Hall thrusters
Elijah Jans	Ohio State University, now at Sandia, USA	Cavity ringdown spectroscopy in ns pulsed discharges
Hui Lian	ASIPP&UCLA	Development of a Combined Polarimeter-interferometer system for Non-Inductive Plasma Position Measurement in Long Pulse discharges on EAST
Eiichi Yatsuka	QST - Naka	Dual-laser self-calibrating Thomson scattering experiments in LHD
Chi-Shung Yip	ASIPP	Recent development of LIF diagnostics in ASIPP
Dirk Luggenhölscher	Ruhr University Bochum	Time resolved CO <sub>2</sub> ro-vibrational excitation in a nanosecond discharge measured with laser absorption spectroscopy
Ibrahim Sadiq	Leibniz Institute for Plasma Science and Technology (INP)	Mid-infrared frequency comb spectroscopy of plasmas

### ***Registration***

To qualify for the early registration fee (JPY60,000 for regular participants and JPY30,000 for student participants), participants must register online at the LAPD20 website by 28<sup>th</sup> July 2023. After 28<sup>th</sup> July, registration will be accepted at a cost of JPY70,000 for regular participants and JPY40,000 for student participants. The registration fee covers attendance at all sessions, symposium materials including program book, welcome reception, banquet dinner, coffee breaks, light meal during poster session and excursion. If will be bringing an accompanying person please indicate this on the registration form; the accompanying person registration fee is JPY20,000. Accompanying persons are invited to attend the welcome reception, banquet dinner and excursion. Registration on the LAPD20 website will open after 1 May 2023.

You will be informed of the acceptance of your abstract by email. At this time, you will also be invited to follow the instructions to pay your registration fee by credit card via the conference website. All credit card details will be encrypted.

### ***Accommodation***

A block of rooms is reserved for conference participants at the conference site, Kyoto Garden Palace Hotel. Detail room rates are announced in LAPD20 website on 1<sup>st</sup> May 2023.

JPY8,210 for single room, JPY10,510 for single occupancy for twin room, JPY 7,510 per person for twin occupancy (i.e. JPY 15,020 for a room occupied by two). Additional deluxe rooms are prepared. All includes breakfast. If you prefer you can instead stay at a hotel in the city center, but the Local Organizing Committee will not take care of these arrangements.

### ***Social events***

#### ***Reception***

The welcome reception will be held from 19:00, 10<sup>th</sup> September 2023. Light food and beverages will be served.

#### ***Excursion***

A half-day excursion is scheduled on 13<sup>th</sup> September.

#### ***Symposium dinner***

The banquet dinner will take place at 19:30 on 13<sup>th</sup> September 2023. The winner of the poster presentation award will be announced during this dinner.

### ***Venue and travel information***

#### ***Venue***

Kyoto Garden Palace Hotel (website <https://www.hotelgp-kyoto.com/english/>) locates in the center of Kyoto city. Kyoto was the capital of Japan until 1869. The location of the hotel is convenient for sightseeing around Kyoto.

#### ***Access to JR (Japan Railway) Kyoto Station from Kansai International Airport (KIX)***

Kansai International Airport (KIX) is the nearest international airport to Kyoto. Trains or the Airport Limousine Bus are available from Kansai International Airport to JR Kyoto Station.

Train : (1) JR Airport Limited Express “Haruka” (about 80 min.) or (2) JR Rapid Train “Kankukaisoku” from the airport station to Osaka station and JR Rapid Train “Shinkaisoku” from Osaka station to Kyoto station.

(Kansai International Airport Train Access Information <https://www.kansai-airport.or.jp/en/access/train/> )

Airport Limousine Bus : Kansai Airport Limousine (about 90 min.)

(Airport Limousine Bus Time Table <https://www.kate.co.jp/en/timetable/index> )

#### ***Access to JR Kyoto Station from other international airports***

From other international airports (Narita, Chubu, Fukuoka), convenient train connection is available to the closest JR Shinkansen (bullet train) station. Frequent schedule is available from Tokyo (the closest station to Narita airport), Nagoya (the closest station to Chubu airport), Hakata (the closest station to Fukuoka airport) to JR Kyoto station.

#### ***Access to the symposium venue, Kyoto Garden Palace Hotel***

From JR Kyoto station, the subway Karasuma Line is available to get to Kyoto Garden Palace Hotel, which

locates between Marutamachi and Imadegawa stations.

Approx 8min, walk from the exit 2 of Marutamachi Station or exit 6 of Imadegawa Station.

By taxi from JR Kyoto Station : about 15 minutes. It costs about JPY1,800

### ***Visa application***

Detail information about visa application will be notified on 1<sup>st</sup> May 2023 in LAPD20 website.

### ***Important dates***

- Abstract submission and hotel reservation start 1 May 2023
- Registration start 19 May 2023
- Abstract submission deadline : 16 June 2023
- Abstract acceptance notify: 30 June 2023
- Early registration deadline (JPY 60,000 for regular participants and JPY 30,000 for student participants): 28 July 2023
- Manuscript submission deadline for JINST: 1 September 2023
- LAPD symposium: 10 - 14 September, 2023

Best regards,

Kenji Tanaka, National Institute for Fusion Science  
Chair of the Local Organizing Committee of LAPD20  
lapd20@nifs.ac.jp

### ***International Scientific Committee***

P. Bilkova (Chair), Institute of Plasma Physics, Czech Republic

J. P. Booth, Ecole Polytechnique, Palaiseau, France

A. Diallo, Princeton Plasma Physics Laboratory, Princeton, USA

R. Engeln, Eindhoven University of Technology, Netherland

Ivo Furno, Swiss Plasma Center (SPC), Ecole Polytechnique Fédérale Lausanne (EPFL), Switzerland

L. Giudicotti, University of Padova, Italy

Y-C. Ghim, Korea Advanced Institute of Science and Technology, South Korea (Vice Chair)

J. P. van Helden, Leibniz Institute for Plasma Science and Technology, Germany

H. Liu, Institute of Plasma Physics Chinese Academy of Sciences, China

K. Sasaki, Hokkaido University, Japan

F. Skiff, University of Iowa, USA

K. Tanaka, National Institute for Fusion Science, Japan (LOC chair)