

# SECOND ANNOUNCEMENT



32<sup>nd</sup> Summer School and  
International Symposium on  
the Physics of Ionized Gases

Belgrade, Serbia (26.08. - 30.08.2024)



## GENERAL INFORMATION

Dear Colleagues,

The **32<sup>nd</sup> Summer School and International Symposium on the Physics of Ionized Gases (SPIG 2024)** will be held in Belgrade, Serbia, in the period 26 – 30 August 2024.

**The SPIG 2024** follows a longtime tradition initiated 62 years ago. The Conference covers a wide range of topics from fundamental studies to applications of ionized gases.

There will be two workshops, 2<sup>nd</sup> Workshop on Swarm Physics and Gaseous Dielectrics and LIBS4fusion Workshop associated to the conference.

### TOPICS

#### Section 1.

##### ATOMIC COLLISION PROCESSES

- 1.1. Electron and Photon Interactions with Atomic Particles
- 1.2. Heavy Particle Collisions
- 1.3. Swarms and Transport Phenomena

#### Section 2.

##### PARTICLE AND LASER BEAM INTERACTION WITH SOLIDS

- 2.1. Atomic Collisions in Solids
- 2.2. Sputtering and Deposition
- 2.3. Laser and Plasma Interaction with Surfaces

#### Section 3.

##### LOW TEMPERATURE PLASMAS

- 3.1. Plasma Spectroscopy and Other Diagnostic Methods
- 3.2. Gas Discharges
- 3.3. Plasma Applications and Devices

#### Section 4.

##### GENERAL PLASMAS

- 4.1. Fusion Plasmas
- 4.2. Astrophysical Plasmas
- 4.3. Collective Phenomena

### SCIENTIFIC PROGRAMME

The program of the SPIG 2024 will consist of Plenary Invited Lectures (45 min), Topical Invited Lectures (30 min), Progress Reports (20 min) and Contributed Papers (poster presentations), as well as the workshops' lectures (30 min). The Proceedings of Contributed Papers and Abstracts will be published and available before the Conference. Contributed papers and abstracts will be refereed by the Scientific Committee.

The official language of the Conference is English.

## PLENARY LECTURES (CONFIRMED LECTURES)

### Section 1. ATOMIC COLLISION PROCESSES

1. **Xiao-Min Tong** (Japan): Theory on dynamics of atoms in strong laser field.
2. **Stephan Schlemmer** (Germany): Missing ions in laboratory and space.
3. **Alicja Domarcka** (France): Ion processing of molecular systems: a way to form complex systems in space.
4. **Carla Faria** (United Kingdom): Exploring quantum effects in strong-field and attosecond science, but this may change.
5. **Gerhard G. Paulus** (Germany): Extreme UV imaging with high harmonics.
6. **Himadri Chakraborty** (USA): Impact spectroscopy and chronoscopy of gas phase atoms, molecules and fullerenes.

### Section 3. LOW TEMPERATURE PLASMAS

1. **Jan van Dijk** (Netherlands). LXCat 3 and Beyond – Fostering Reproducibility in Low-Temperature Plasma Science.
2. **Satoshi Hamaguchi** (Japan): Opportunities and challenges in low-temperature plasma science for atomic-layer processing.

### Section 4. GENERAL PLASMAS

1. **Paola Marziani** (Italy): Super-Eddington Quasars: from Atomic Physics to Cosmology.
2. **Andreja Gomboc** (Slovenia): How stars get torn apart by supermassive black holes.
3. **Luca Volpe** (Spain): Towards an European IFE program: Laser Fusion technology, science and related applications.

## TOPICAL LECTURES (CONFIRMED LECTURES)

### Section 1. ATOMIC COLLISION PROCESSES

1. **Nuno Pinhão** (Portugal): Description of electron swarms in an electric field: a finite elements computation including third-order transport parameters.
2. **Ugo Jacovella** (France): Exploring the importance of interstellar ions in the enigma of diffuse interstellar bands.
3. **Helgi Hrodmarsson** (France): VUV photoionization of interstellar molecules: Making sense of our beautifully mysterious Universe molecule by molecule.

### Section 2. PARTICLE AND LASER BEAM INTERACTION WITH SOLIDS

1. **Marija Gorjanc** (Slovenia): Plasma modification of textile fibers for adhesion improvement in bio-composites.

2. **Milan Radović** (Switzerland): Pulse Laser Deposition and Advanced Spectroscopy: Key to Revealing Emerging Properties in Transition Metal Oxides.
3. **Andrey Kaziev** (Russia): Title pending.

### Section 3. LOW TEMPERATURE PLASMAS

1. **Peter Papp** (Slovakia): Ion induced reactions in IMS studied by DFT.
2. **Violeta Lazić** (Italy): LIBS spectroscopy: what we can measure, and how?
3. **Mirjana Kostić** (Serbia): Atmospheric pressure plasma in processing of cellulose fibres: from surface cleaning to tailored properties.
4. **Miran Mozetič** (Slovenia): Inactivation of viruses in water by plasma treatment.
5. **Nevena Puač** (Serbia): Diagnostics and applications of atmospheric pressure plasmas for triggering of cell mechanisms.
6. **Peter Hartmann** (Hungary): Using dust particles as probes in low pressure gas.
7. **Claudia Lazzaroni** (France): Micro hollow cathode discharges in Ar/N<sub>2</sub> used for boron nitride PECVD.
8. **Paul Maguire** (United Kingdom): Liquid microdroplets in a microplasma: phenomena and technological applications.

### Section 4. GENERAL PLASMAS

1. **Chihiro Suzuki** (Japan): Comprehensive Z dependence analysis of soft X-ray spectra from highly charged heavy ions using magnetically confined high-temperature plasmas.
2. **Miroslava Vukčević** (Serbia): On the conditions for soliton formation in the galactic environment.
3. **Giovanni La Mura** (Italy): Interstellar dust as a dynamic environment.
4. **Nikolai N. Bezuglov** (Russia): Penning and photoionizations of cold Rydberg alkali metal atoms under Förster resonance conditions.
5. **Magdalena D. Christova** (Bulgaria): Astrophysical applications of Stark broadening of spectral lines.

## PROGRESS REPORTS (CONFIRMED LECTURES)

### Section 1. ATOMIC COLLISION PROCESSES

1. **Marine Fournier** (France): Photoelectron spectroscopy of solvated biological interest molecule in liquid-jet configuration.
2. **Daan Boer** (Netherlands): LoKI-B C++: An open-source Boltzmann solver for reproducible electron Boltzmann calculations.
3. **Jasmina Atić** (Serbia): Electron transport and negative ionization fronts in strongly attaching gases.
4. **Matthias Werl** (Austria): Simulating the formation and de-excitation of hollow atoms by highly charged ion scattering on surfaces.
5. **Danijela Danilović** (Serbia): Synchrotron radiation photoelectron spectroscopy study of the electronic structure of Ag-Bi-I rudoiffite nanoparticles.

6. **Myriam Drissi** (France): Photoelectron spectroscopy of radicals of astrochemical interest.
7. **Emilia Jasmiina Heikura** (Germany): Distance dependent photoelectron circular dichroism after inner-shell ionization in se-butyl trimethylsilylether.
8. **Dino Habibović** (Bosnia and Herzegovina): Strong-field processes induced by ultrashort pulses with two carrier frequencies.
9. **Laura Pille** (Germany): Exploring biomolecular properties in the gas phase by using advanced light sources.

## Section 2. PARTICLE AND LASER BEAM INTERACTION WITH SOLIDS

1. **Violeta Stanković Mališ** (Serbia): Modeling the surface interaction of cellulosic materials with CO<sub>2</sub> plasmas.
2. **Ana Kalinić** (Serbia): Interaction of ions with graphene-insulator-graphene composite systems.
3. **Hristina Delibašić Marković** (Serbia): Characterizing Ionization and Electron Dynamics in Biological Materials: Theoretical and Numerical Insights into Pulsed Laser-Induced Breakdown Processes.

## Section 3. LOW TEMPERATURE PLASMAS

1. **Aleksandar Jovanović** (Germany): Fluid modelling of single-filament DBD and self-pulsing discharges at atmospheric pressure using FEDM.
2. **Marjan Stankov** (Germany): Analysis of dielectric barrier discharges in Ar-monomer mixtures using a standardized fluid modelling approach.
3. **Olga Stepanova** (Russia): Air-Plasma-Water Electrophysical System: prospects and problems.
4. **Ivan Traparić** (Serbia): Application of Machine Learning and Artificial Intelligence in Plasma Spectroscopy.
5. **Sanja Pavlović** (Serbia): Thermal and acoustic properties of cellulose fibrous materials.

## Section 4. GENERAL PLASMAS

1. **Aleksandra Kolarski** (Serbia): Properties of Earth's lower ionospheric plasma perturbed by solar flares.
2. **Felix Iacob** (Romania): Electron NS<sup>+</sup> collisions in cold plasma.
3. **Nikola Veselinovic** (Serbia): Fluctuations in the Flux of Energetic Protons in Heliosphere before and during Sudden Decreases in Galactic Cosmic Ray Intensity.
4. **Vladimir Zeković** (Serbia): SLAMS-enhanced particle acceleration at high-Mach number astrophysical shocks: TeV in a blink of a supernova.
5. **Ivan Milić** (Serbia): 3D plasma diagnostics of the lower solar atmosphere using high-resolution spectropolarimetric observations.
6. **Petar Kostić** (Serbia): Supernova remnants in clumpy medium: hydrodynamic and radio synchrotron evolution.
7. **Valeriia Istokskaia** (Czech Republic): About proton-Boron fusion using lasers.

## 2nd Workshop on Swarm Physics and Gaseous Dielectrics

The second workshop on Swarm Physics and Gaseous Dielectrics (2<sup>nd</sup> SPGD) will be held on Monday, August 26<sup>th</sup>, during the SPIG 2024 conference in Belgrade, Serbia. Leading specialists from universities, research laboratories, and funding agencies worldwide will gather for a meeting, where they will focus on swarm-based studies to advance and utilize gaseous dielectrics in high-voltage technology. The workshop is designed to examine experimental and theoretical methods for studying charged particle interactions with molecules, including scattering and transport, in both gaseous and condensed phases. Particular topics include the modelling of charged particle kinetics in low-temperature plasmas, focusing on techniques associated with the Boltzmann equation, Monte Carlo method, and fluid equation-based models. The workshop will consist of invited progress reports followed by a discussion session on topical issues and the future of the field. The workshop is supported by the Science Fund of the Republic of Serbia, Grant No. 7749560, project EGWIn.

### LIST OF CONFIRMED SPEAKERS

1. Miloš Ranković (Czech Republic), Electron-induced processes in dielectric insulation gases
2. Nathan Garland (Australia), Rapidly exploring and designing electron transport quantities in dielectric gas insulator mixtures with approximation theories
3. Greg Boyle (Australia) Analysis of current waveforms in the pulsed-Townsend Experiment
4. Dale Muccignat (Australia) Advances in machine learning methods for the determination of electron scattering cross-section sets
5. Jacob Stephens (USA) Multi term Boltzmann models: Engineering Tools for the Pulsed Power Community
6. Luca Vialetto (USA) Particle propagation and electron transport in gases and plasmas
7. Satoru Kawaguchi (Japan) Physics-informed neural networks for studies on electron swarms in gases
8. Boya Zhang (China) Deriving Swarm Parameters from Ion Kinetics and Determining Collision Cross Sections through Data-Driven Methods for Eco-friendly Insulating Gase
9. Jaime de Urquijo (Mexico) Three-body electron attachment processes in H<sub>2</sub>O, CO<sub>2</sub>, and their mixtures
10. Marnik Metting Van Rijn (Switzerland) Electron scattering cross sections of 1,1,1,2-Tetrafluoroethane (R134a)

## **INSTRUCTIONS FOR AUTHORS**

We kindly remind you to register (if you have not already done so) and send your Contributed papers (four pages) and Abstracts of Invited lectures and Progress Reports (one page). The sample for preparation of the Contributed papers/abstracts can be found on the Conference Website and should be sent via Paper submission service on the Website. The Scientific Committee will make the final selection for oral and poster presentation. The Proceedings of Contributed Papers with abstracts of Invited Lectures and Progress Reports will be published and will be available at the Conference.

## **VENUE**

Serbian Academy of Sciences and Arts, Knez Mihailova 35, Belgrade, Serbia.

## **ACCOMODATION**

We have made a special arrangement of hotel services for the conference participants. Please visit the Conference Web page <https://spiq2024.ipb.ac.rs/accommodation.html> for more details.

## **TRAVEL INFORMATION**

Belgrade can be reached by plane, train, bus, car or bicycle. Please visit the Conference Web page <https://spiq2024.ipb.ac.rs/travel.html> for more details.

## COMMITTEES

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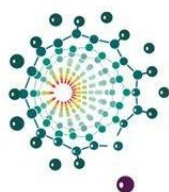
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### ORGANIZED BY:



Faculty of Physical Chemistry  
University of Belgrade



Serbian Academy of  
Science and Arts



## **CONTACT**

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**The official technical organizer of the Conference is [PanaComp Agency](#)**