32nd Summer School and International Symposium on the Physics of Ionized Gases

August 26 – 30, 2024, Belgrade, Serbia

S P I G 2024

PROGRAMME

University of Belgrade – Faculty of Physical Chemistry

Serbian Academy of Sciences and Arts

Belgrade, 2024

SPIG 2024 PROGRAMME

Belgrade, Serbia, August 26 – 30, 2024

All indicated times are given in the Central European Summer Time (CEST) zone.

Monday 26th August 2024		
	Workshops	
	2nd SPGD Workshop	***LIBS4fusion Workshop***
09:20-09:30	Opening and Introduction: Saša Dujko	Opening: Milivoje Ivković
	Session 1, Hall A	***Session 1, Hall B***
09:30-10:00	**Miloš Ranković** (Czech Republic) Electron-induced processes in dielectric insulation gases	**Volker Naulin** (Denmark) Fusion: from science fiction to science fact
10:00-10:30	**Jaime de Urquijo** (Mexico) Three-body electron attachment processes in H2O, CO2, and their mixtures	**Radomir Panek** (Czech Republic) EUROfusion, the consortium coordinating European fusion research
10:30-11:00	**Boya Zhang** (China) Deriving Swarm Parameters from Ion Kinetics and Determining Collision Cross Sections through Data-Driven Methods for Eco-friendly Insulating Gase	**Miloš Škorić** (Serbia) to be confirmed Fusion related research at the University of Belgrade
11:00-11:30	***Coffee break***	
	Session 2, Hall A	***Session 2, Hall B***
11:30-12:00	**Jacob Stephens** (USA) Multi term Boltzmann models: Engineering Tools for the Pulsed Power Community	**Corneliu Porosnicu** (Romania) Plasma-wall interaction studies within the EUROfusion Consortium
12:00-12:30	**Luca Vialetto** (USA) Particle propagation and electron transport in gases and plasmas	**V. Alimov** (Russia) to be confirmed Diagnostics of the fusion reactor wall
12:30-13:00	**Satoru Kawaguchi** (Japan) Physics-informed neural networks for studies on electron swarms in gases	**Violeta Lazić** (Italy) Deployments of Laser Induced Breakdown Spectroscopy
13:00-15:00	***Lunch break***	
	Session 3, Hall A	***Session 3, Hall B***
15:00-15:30	**Dale Muccignat** (Australia) Advances in machine learning methods for the determination of electron scattering cross-section sets	**Milivoje Ivković** (Serbia) NOVA2LIBS4fusion
15:30-16:00	**Greg Boyle** (Australia) Analysis of current waveforms in the pulsed-Townsend Experiment	**Dragan Ranković** (Serbia) TEA CO2 laser LIBS
		15:50 **Biljana Stankov** (Serbia) Stark parameters of beryllium spectral lines
16:00-16:30	**Nuno Pinhão** (Portugal) Fitting of Electron Collision Cross Sections from Swarm Data using a Genetic Algorithm	16:10 **Miroslav Kuzmanović** (Serbia) Problem of LIBS surface and depth elemental analysis of PFC materials
16:30-17:00	***Coffee break***	
	Session 4, Hall A	***Session 4, Hall B***
17:00-17:30	**Nathan Garland** (Australia) Rapidly exploring and designing electron transport quantities in dielectric gas	**Ivan Traparić** (Serbia) Hydrogen isotope retention diagnostics

	insulator mixtures with approximation theories	17:20 **Marijana Gavrilović Božović** (Srbia)
17:30-18:00	**Marnik Metting Van Rijn** (Switzerland) Electron scattering cross sections of 1,1,1,2-Tetrafluoroethane (R134a)	17:40 **Milivoje Ivković** (Serbia) In-situ LIBS for fusion reactors surface diagnostics
18:00-20:00	***SPIG 2024 Welcome Cocktail (Club of SASA)***	18:00-18:30 Rounding table

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Tuesday 27th August 2024
SPIG 2024 (day 2)

PL *– Plenary lecture: 35+10 min* | ***TL*** *– Topical lecture: 25+5 min* | ***PR*** *– Progress Report: 15+5 min*

08:45-09:00	***Opening, Chairs:*** *Bratislav Obradović, Jovan Cvetić and Miroslav Kuzmanović*	
	Plenary Session 1, Hall A, *Chair: Dejan Milošević*	
09:00-09:45	**Xiao-Min Tong** (Japan) Theory on dynamics of atoms in strong laser field	
09:45-10:30	**Gerhard G. Paulus** (Germany) Extreme UV imaging with high harmonics	
10:30-11:00	***Coffee Break***	
	Plenary Session 2, Hall A, *Chair: Miloš Škorić*	
11:00-11:45	**Luca Volpe** (Spain) Current situation and future prospectives of the European IFE program, technology development, science and related applications	
11:45-12:30	**Andreja Gomboc** (Slovenia) How stars get thorn apart by supermassive black holes	
12:30-14:30	***Lunch Break***	
	Hall A - Parallel Session: *Chair: Bratislav Obradović*	***Hall B - Parallel Session*** *Chair: Ivan Mančev*
14:30-15:00	**Paul Maguire** (United Kingdom) Liquid microdroplets in a microplasma: phenomena and technological applications 3	**Peter Papp** (Slovakia) Ion induced reactions in IMS studied by DFT 3
15:00-15:30	**Nevena Puač** (Serbia) Diagnostics and applications of atmospheric pressure plasmas for triggering of cell mechanisms 3	**Violeta Stanković Mališ** (Serbia) Modeling the surface interaction of cellulosic materials with CO_2 plasmas 2 (15:00-15:20) **Ana Kalinić** (Serbia): Interaction of ions with graphene-insulator-graphene composite systems 2 (15:20-15:40)
15:30-16:00	**Claudia Lazzaroni** (France) Micro hollow cathode discharges in Ar/N_2 used for boron nitride PECVD 3	**Hristina Delibašić Marković** (Serbia): Characterizing Ionization and Electron Dynamics in Biological Materials: Theoretical and Numerical Insights into Pulsed Laser-Induced Breakdown Processes 2 (15:40-16:00)
16:30-17:00	***Coffee Break***	
	Hall A - Parallel Session *Chair: Jovan Cvetić*	***Hall B - Parallel Session*** *Chair: Ivan Radović*
17:00-17:30	**Chihiro Suzuki** (Japan) Comprehensive Z dependence analysis of soft X-ray spectra from highly charged heavy ions using magnetically confined high-temperature plasmas 4	**Myriam Drissi** (France) Photoelectron spectroscopy of radicals of astrochemical interest 4 (17:00-17:20)
17:30-18:00	**Sergei Ryzhkov** (Russia) Magneto-inertial fusion and powerful installation 4	**Matthias Werl** (Austria) De-excitation cascade calculation for highly excited of hollow atoms 1 (17:20-17:40)
18:00-18:20	**Blagoje Djordjevic** (USA): Integrated radiation-magneto-hydrodynamic simulations of magnetized burning plasmas	**Jasmina Atić** (Serbia) Electron transport and negative ionization fronts in strongly attaching gases 1 (17:40-18:00)

		Danijela Danilović (Serbia) Synchrotron radiation photoelectron spectroscopy study of the electronic structure of Ag-Bi-I rudorffite nanoparticles 1 (18:00-18:20)
18:30-20:00	***Poster session 1*** - SASA Gallery of Science and Technology *(Chair: Nikola Cvetanović)*	

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Wednesday 28th August
SPIG 2024 (day 3)

PL *– Plenary lecture: 35+10 min* | ***TL*** *– Topical lecture: 25+5 min* | ***PR*** *– Progress Report: 15+5 min*

	Plenary Session 3, Hall A, *Chair: Igor Savić*	
09:00-09:45	**Stephan Schlemmer** (Germany) Missing ions in laboratory and space	
09:45-10:30	**Alicja Domaracka** (France) Ion processing of molecular systems: a way to form complex systems in space	
10:30-11:00	***Coffee Break***	
	Plenary Session 4, Hall A, *Chair: Dragana Marić*	
11:00-11:45	**Jan van Dijk** (Netherlands) LXCat 3 and Beyond – Fostering Reproducibility in Low-Temperature Plasma Science	
	Hall A - Parallel Session *Chair: Aleksandar Milosavljević*	***Hall B - Parallel Session*** *Chair: Jelena Kovačević Dojčinović*
11:45-12:15	**Nuno Pinhão** (Portugal): Description of electron swarms in an electric field: a finite elements computation including third-order transport parameters 1	**Nikolai N. Bezuglov** (Russia): Penning and photoionizations of cold Rydberg alkali metal atoms under Förster resonance conditions 4
12:15-12:45	**Marine Fournier** (France): Photoelectron spectroscopy of solvated biological interest molecule in liquid-jet configuration 1 (12:15-12:35)	**Giovanni La Mura** (Italy): Interstellar dust as a dynamic environment 4
12:45-14:30	***Lunch Break / SPIG Committee meeting***	
	Hall A - Parallel Session *Chair: Sanja Tošić*	***Hall B - Parallel Session*** *Chair: Vladimir Srećković*
14:30-15:00	**Helgi Hrodmarsson** (France): VUV photoionization of interstellar molecules: Making sense of our beautifully mysterious Universe molecule by molecule 1	**Miroslava Vukčević** (Serbia): On the conditions for soliton formation in the galactic environment 4
15:00-15:20	**Dino Habibović** (Bosnia and Herzegovina) Strong-field processes induced by tailored laser fields 1	**Nikola Veselinovic** (Serbia): Fluctuations in the Flux of Energetic Protons in Heliosphere before and during Sudden Decreases in Galactic Cosmic Ray Intensity 4
15:20-15:40	**Daan Boer** (Netherlands) LoKI-B C++: An open-source Boltzmann solver for reproducible electron Boltzmann calculations 1	**Aleksandra Kolarski** (Serbia): Properties of Earth's lower ionospheric plasma perturbed by solar flares 4
15:40-16:00	**Emilia Jasmiina Heikura** (Germany): Towards distant dependent inner-shell photoelectron circular dichroism 1	**Vladimir Zeković** (Serbia): SLAMS-enhanced particle acceleration at high-Mach number astrophysical shocks: TeV in a blink of a supernova 4
16:00-16:20	**Laura Pille** (Germany): Exploring biomolecular properties in the gas phase by using advanced light sources 1	**Petar Kostić** (Serbia): Supernova remnants in clumpy medium: hydrodynamic and radio synchrotron evolution 4
16:30	***Mini excursion (info at registration desk): Belgrade underground tour***	

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Thursday 29th August 2024
SPIG 2024 (day 4)

PL *– Plenary lecture: 35+10 min* | ***TL*** *– Topical lecture: 25+5 min* | ***PR*** *– Progress Report: 15+5 min*

	Plenary Session 5, Hall A*, Chair: Nenad Simonović*	
09:00-09:45	**Carla Faria** (United Kingdom) Exploring quantum effects in the attosecond domain	
09:45-10:30	**Himadri Chakraborty** (USA) Impact spectroscopy and chronoscopy of gas phase atoms, molecules and fullerenes	
10:30-11:00	***Coffee Break***	
	Plenary Session 6, Hall A, *Chair: Dragana Ilić*	
11:00-11:45	**Paola Marziani** (Italy) Super-Eddington Quasars: from Atomic Physics to Cosmology	
11:45-12:30	**Satoshi Hamaguchi** (Japan): Opportunities and challenges in low-temperature plasma science for atomic-layer processing	
12:30-14:00	***Lunch Break***	
	Hall A - Parallel Session *Chair: Vladimir Milosavljević*	***Hall B - Parallel Session*** *Chair: Marko Ćosić*
14:00-14:30	**Marija Gorjanc** (Slovenia): Plasma modification of textile fibers for adhesion improvement in bio-composites 2	**Magdalena D. Christova** (Bulgaria): Astrophysical applications of Stark broadening of spectral lines 4
14:30-15:00	**Mirjana Kostić** (Serbia): Atmospheric pressure plasma in processing of cellulose fibres: from surface cleaning to tailored properties 3	**Ugo Jacovella** (France): Exploring the importance of interstellar ions in the enigma of diffuse interstellar bands 4
15:00-15:30	**Miran Mozetič** (Slovenia): Inactivation of viruses in water by plasma treatment 3	**Felix Iacob** (Romania) Electron NS+ collisions in cold plasma 4 (15:00-15:20)
15:30-16:00	***Coffee Break***	
	Hall A - Parallel Session *Chair: Predrag Ranitović*	***Hall B - Parallel Session*** *Chair: Goran Poparić*
16:00-16:30	**Milan Radović** (Switzerland) Pulse Laser Deposition and Advanced Spectroscopy: Key to Revealing Emerging Properties in Transition Metal Oxides 2	**Peter Hartmann** (Hungary) Using dust particles as probes in low pressure gas 3
16:30-17:00	**Violeta Lazić** (Italy) LIBS spectroscopy: what we can measure, and how? 3	**Sanja Pavlović** (Serbia) Thermal and acoustic properties of cellulose fibrous materials 3 (16:30-16:50)
17:00-17:20	**Ivan Traparić** (Serbia) Application of Machine Learning and Artificial Intelligence in Plasma Spectroscopy 3	**Marjan Stankov** (Germany) Analysis of dielectric barrier discharges in Ar-monomer mixtures using a standardized fluid modelling approach 3 (16:50-17:10)
17:20-17:40	**Olga Stepanova** (Russia) Air-Plasma-Water Electrophysical System: prospects and problems 3	**Aleksandar Jovanović** (Germany) Fluid modelling of single-filament DBD and self-pulsing discharges at atmospheric pressure using FEDM 3 (17:10-17:30)
17:50-19:00	***Poster session 2*** - SASA Gallery of Science and Technology *(Chair: Miroslav Kuzmanović)*	
20:00-24:00	**Conference dinner and closing**	

Friday 30th August 2024 SPIG 2024 (day 5)	
10:00-17:00	*Excursions (optional, info at registration desk): Belgrade sightseeing cruise (10 – 13:30)*
17:00	**Departure**

LIST OF POSTERS

No.	Section	Title	Authors
1	1.1.	Excitation of acetone induced by electron impact	Barbora Stachová, Juraj Országh and Štefan Matejčík
2	1.1.	Small molecules essential to astrophysics: collisional and radiative processes	S. Tošić, V. Srećković and V. Vujčić
3	1.1.	Investigation of elastic electron scattering from desflurane molecule at intermediate electron energy	J. Vukalović, J.B. Maljković, F. Blanco, G. Garcia and B.P. Marinković
4	1.1.	Ejected electron spectra of krypton studied by high and low energy electrons	B.P. Marinković, J.J. Jureta and L. Avaldi
5	1.1.	Electron scattering cross sections represented in Belgrade electron-atom/molecule database (beam)	B.P. Marinković and S.Đ. Ivanović
6	1.1.	Direct electron-liquid energy loss spectra measurements using a liquid micro-jet	D. L. Muccignat, D. B. Jones, J. R. Gascooke, G. J. Boyle, N. A. Garland and R. D. White
7	1.1.	Influence of catastrophes and hidden dynamical symmetries on ultrafast backscattered photoelectrons	T. Rook, L. Cruz Rodriguez and C. Figueira de Morisson Faria
8	1.1.	Dissociative electron attachment to CO_2 in electric and magnetic fields	M. M. Vojnović, M. M. Ristić, V. V. Stanković-Mališ and G. B. Poparić
9	1.1	Investigation of Elastic Electron Scattering by Anaesthetic Molecules in Gaseous Phase	Jelena B. Maljović, Jelena Vukalović, Francisco Blanco, Gustavo Garcia and Bratislav P. Marinković
10	1.2.	Post-prior discrepancy in the CB1-4B method for single-electron capture in fast Li^{3+} + He collisions	Nenad Milojević, Ivan Mančev, Danilo Delibašić and Miloš Milenković
11	1.3.	Diffusion coefficients of H_2^+ ions in H_2 gas	Ž. Nikitović and Z. Raspopović
12	1.3.	Transport properties of two-temperature SF_6 and its alternative gases	G.Wang, B. Zhang and X.Li
13	1.3.	Monte Carlo simulation of electron swarms in pulsed Townsend experiment and validation of the swarm data derived from waveform analysis	M. Hao, G. Hagelaar, B. Zhang and X. Li
14	1.3.	An aliasing method for determination of transport data for exotic charged particles in crossed electric and magnetic fields	N. A. Garland, R. D. White, R. E. Robson and M. Hildebrandt

15	1.3.	Studies on electron swarms and streamer discharges in eco-friendly RPC gases	S. Dujko, I. Simonović, D. Bošnjaković, Z.Lj. Petrović and J. De Urquijo
16	1.3.	Electron transport in radio-frequency electric and magnetic fields in ultra-low GWP gases	S. Dujko, I. Simonović, D. Bošnjaković, J. Atić and Z. Lj. Petrović
17	1.3.	Studies on streamer discharges in ultra-low GWP gases	D. Bošnjaković, I. Simonović and S. Dujko
18	1.3.	Electron transport in simple liquid mixtures	G. J. Boyle, N. A. Garland, R. P. Mceachran and R. D. White
19	1.3	Three-dimensional streamer model in the AMREX environment	I. Simonović, D. Bošnjaković and S. Dujko
20	2.1.	Interaction of ions with drift-current biased supported graphene	A. Kalinić, I. Radović, L. Karbunar and Z. L. Mišković
21	2.1.	Rainbows in transmission of protons through thin silicon carbide crystal	N. Starčević and S. Petrović
22	2.1.	Low energy heavy ion rainbow scattering by graphene	M. Hadžijojić and M. Ćosić
23	2.2.	Forming nanocrystalline SnO_2 films on silicon and silicon dioxide by laser-plasma deposition method	F. Komarov, O. Milchanin, M. V. Puzyrev and I. S. Rahavaya
24	2.3.	Equilibrium composition of plasma obtained by laser ablation of glass	M. Ristić, A. Šajić, J. Babić and M. Kuzmanović
25	2.3.	Semiquantum simulation of cellulosic materials interaction with CO_2 plasmas	V. Stanković Mališ and Goran B. Poparić
26	2.3.	Properties of Cu/Zn oxide nanostructures formed by plasma-activated electrolysis	N. Tarasenko, V. Kornev, M. Nedelko, A. Radomtsev, N. Tarasenka, J. Ciganović, S. Živkovic and M. Momcilović
27	2.3.	Target selection for LIBS studies of hydrogen isotope retention	D. Ranković, B. Stankov, I. Traparić, M. Kuzmanović and M. Ivković
28	3.1.	Measurement of the velocity of the plasma jet appearing from a wall stabilized arc	L. Gavanski, N. Simić and S. Djurović
29	3.1.	The measurement of pulsed gas discharge parameters by means of Fe I lines in argon and argon-hydrogen mixture	J. Jovović
30	3.1.	Stark widths of several Te II spectral lines for a purpose in investigation of astrophysical spectra	Z. Majlinger, M.S. Dimitrijević and V. Srećković
31	3.1.	Stark width estimates for the most prominent Ce II spectral lines important for astrophysical investigations	Z. Majlinger
32	3.1.	Determination of unknow analyte concentration in glass samples using the LIBS method	A. Šajić, D. Ranković, M.Ristić and M. Kuzmanović
33	3.1.	Investigating the thermal profile of an atmospheric pressure argon plasma jet on a conductive and insulating mesh surface	J. Lalor and V. Milosavljević
34	3.1.	The use of thermoelectric radiation detectors for heat flux measurements in shock-tubes with gas ionization	S.A. Poniaev, P.A. Popov, N.A. Monakhov, T.A. Lapushkina and M.A. Kotov

35	3.1.	Detection of rhenium in tungsten using LIBS with additional fast pulse discharge	I. Traparic, B. Stankov and M. Ivković
36	3.1.	Estimation of nitrogen impurity level in helium atmospheric discharge via emission spectroscopy	N. Cvetanović, S.S. Ivković and B.M. Obradović
37	3.1.	The effect of acids on pig bone estimated by LIBS	M. Marković, D. Ranković and M. Kuzmanović
38	3.1.	Fast photography in the service of spatially and temporally resolved LIBS diagnostics of doped tungsten	B. Stankov, M. R. G. Božović, D. Ranković, J. Savović and M. Ivković
39	3.1.	Influence of the ablation angle change on spectral line intensities in LIBS experiments	I. Traparić, B. Stankov, N. Vujadinović, M. Vinić and M. Ivković
40	3.2.	Modelling of an icp discharge in oxygen with full kinetics scheme with newly calculated VV/VT rate constants	A. Kropotkin, A. Chukalovsky, A. Kurnosov, T. Rakhimova and A. Palov
41	3.2.	Influence of interelectrode distance on the characteristics of three-electrode pulsed sdbd	V. V. Voevodin, O. I. Korzhova, V. Yu. Khomich, V. A. Yamschikov, N. Yu. Lysov and A. V. Klubkov
42	3.2.	RF breakdown in argon at low-pressures: experiment and modelling	J. Marjanović, D. Marić, M. Puač, A. Đorđević and Z. Lj. Petrović
43	3.2.	Cathode sheath diagnostics by integral end-on optical emission spectroscopy in an analytical glow discharge source in argon	N. V. Nedić, N. V. Ivanović, I. R. Videnović, Dj. Spasojević and N. Konjević
44	3.3.	Luminescent analysis of e-beam induced transformation of phenol in the presence of humic substances	E. N. Bocharnikova, O. N. Tchaikovskaya, S. A. Chaykovsky, V. I. Solomonov, A. S. Makarova and I. V. Sokolova
45	3.3.	The formation of microneedles structures from silicon using plasma etching in SF_6/O_2 mixture in inductively coupled plasma	V. Kuzmenko, A. Miakonkikh and K. Rudenko
46	3.3.	Fluorocarbon polymerizing plasmas etching processes for structures of microelectronics	A. Miakonkikh, V. Kuzmenko and K. Rudenko
47	3.3.	A&M datasets for LTP treatment of plants	V. Vujčić, V.A. Srećković, O. Kounchev and F. Iacob
48	3.3.	Low-temperature plasma and plasma-activated liquids in solving agricultural problems: experimental technique	E.M. Konchekov, N.G. Gusein-Zade, D.V. Yanykin, L.V. Kolik, Yu.K. Danileiko, V.I. Lukanin, K.F. Sergeichev, I.V. Moryakov, V.D. Borzosekov, V.V. Gudkova, M.E. Astashev and S.V. Gudkov
49	3.3.	Compact piezotransformer source of the cold atmospheric plasma with three types of discharges	N. N. Bogachev, A. S. Bakshaev, L. V. Kolik, E. M. Konchekov and A. S. Kon'kova
50	3.3.	Measurements of reactive oxygen and nitrogen species in plasma activated water by microwave discharge	D. Topalović, N. Babucić, N. Škoro and N. Puač
51	3.3.	Ionization of a plasma antenna channel in a dielectric gas-discharge tube	N. N. Bogachev, I. L. Bogdankevich, V. I. Zhukov, D. M. Karfidov, V. P. Stepin and N. G. Gusein-Zade

52	4.2.	Dataset for photodissociation of small molecular ions	V.A. Srećković, N. Pop, M.S. Dimitrijević, M.D. Christova and V. Vujčić
53	4.2.	Investigation of chemistry of hydrogen, helium and lithium molecular ions in the early Universe	V.A. Srećković, N. Pop, M.S. Dimitrijević and M.D. Christova
54	4.2.	New molecular data for confined molecular systems and astrochemical modelling	V.A. Srećković, N. Pop, and V. Vujčić
55	4.2.	The complex emitter inside dense plasma, continuation of a Coulomb cut-off approach, argon case	N.M. Sakan, Z. Simić, V.A. Srećković and M. Dechev
56	4.2.	Variability along the main sequence of quasars	E. Bon, P. Marziani and N. Bon
57	4.2.	Advanced nonlinear analysis for detecting binary quasars and transient events in the LSST era	A.B. Kovačević, D. Ilić, L.Č. Popović, M. Pavlović, A. Raju, M. Tošić and Iva Čvorović-Hajdinjak
58	4.2	Two-Component Model of Fe II Lines in Spectra of Active Galactic Nuclei	Jelena Kovačević-Dojčinović, Ivan Dojčinovć and Luka Č. Popović

ACKNOWLEDGEMENT

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Serbian Academy of Sciences and Arts

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