

# Towards understanding and modelling intense electronic excitation

Working Group Meeting + MC Meeting + Core Group Meeting  
17 & 18 February 2020  
Warsaw, Poland

## AGENDA

<b>Monday, 17 February 2020</b>	
8:30 – 9:00	Registration
9:00 – 9:20	Opening session
9:20 – 9:30	COST reimbursements rules (A. Benitez)
9:30 – 10:50	<b>Session I: oral presentations + discussions</b> <ul style="list-style-type: none"> <li>• Rivera</li> <li>• F. Da Pieve</li> <li>• Solov'yov</li> <li>• B. Ziaja</li> </ul>
10:50 – 11:15	Coffee break
11:15 – 12:45	<b>Session II: oral presentations + discussions</b> <ul style="list-style-type: none"> <li>• E. Oliva</li> <li>• M. Dimitrijević</li> <li>• L. Stella</li> <li>• V. Tkachenko</li> <li>• K.A. Janulewicz</li> </ul>
12:45 – 14:15	Lunch
12:15 – 15:00	<b>Session III: oral presentations + discussions</b> <ul style="list-style-type: none"> <li>• T. Apostolova</li> <li>• S. Zakharov</li> <li>• M. Müller</li> </ul>
15:00 – 18:00	Poster session (w/ refreshments), interactive discussions, experimentalist corner, core group meeting
19:00	Dinner at restaurant <i>Folk Gospoda</i>

<b>Tuesday, 18 February 2020</b>	
9:30 – 10:45	<b>Session IV: oral presentations + discussions</b> <ul style="list-style-type: none"> <li>• L. Varvarezos</li> <li>• O. Kravcov</li> <li>• H. Vazquez</li> <li>• G. Tsibidis</li> <li>• P. Wachulak</li> </ul>
10:45 – 11:10	Coffee break
11:10 – 12:40	<b>Session V: oral presentations + concluding remarks</b> <ul style="list-style-type: none"> <li>• M. Tatarakis</li> <li>• K. Kaleris</li> <li>• V. Dimitriou</li> <li>• Tazes</li> <li>• M.B. Yelten</li> </ul>
12:40 – 14:00	Lunch
14:00 – 16:00	<b>MC meeting</b> (only for invited MC members)

# DETAILED PROGRAMME

## ORAL PRESENTATIONS

### SESSION I (Monday, 9:30 – 10:50) \*\*\*80 min

I.1	<b>Multiscale approach to the interaction of intense femtosecond laser pulses with plasmonic nanoparticles</b> Antonio Rivera Institute of Nuclear Fusion, Polytechnic University of Madrid, Spain
I.2	<b>Modeling first-stage radiation effects on functional materials and biological matter during a space mission</b> Fabiana Da Pieve Royal Belgian Institute for Space Aeronomy, Brussels, Belgium
I.3	<b>Recent advances in multiscale modelling of irradiation driven molecular processes with MBN Explorer and MBN Studio</b> Andrey Solov'yov MBN Research Center, Frankfurt, Germany
I.4	<b>Time-resolved investigation of the optical phase change as a potential diagnostics tool for XUV FEL pump - optical probe experiments</b> Beata Ziaja Center for Free-Electron Laser Science (CFEL-DESY), Hamburg, Germany

### SESSION II (Monday, 11:15 – 12:45) \*\*\*90 min

II.1	<b>The role of electron collisions in cavity-free nitrogen lasers from filaments</b> Eduardo Oliva Institute of Nuclear Fusion, Polytechnic University of Madrid, Spain
II.2	<b>Spectral Line Profiles for Modelling of Plasma in front of a Metal Target</b> Milan Dimitrijević Astronomical Observatory, Belgrade, Serbia
II.3	<b>A hydrodynamic model of charge and energy transport in bulk and nanostructured amorphous silica</b> Lorenzo Stella Atomistic Simulation Centre, Queen's University Belfast, United Kingdom
II.4	<b>Effect of Auger recombination on transient optical properties in XUV and soft X-ray irradiated silicon nitride</b> Victor Tkachenko Center for Free-Electron Laser Science (CFEL-DESY), Hamburg, Germany
II.5	<b>Nanoexplosion initiated by short-wavelength radiation: optical breakdown in soft matter revisited</b> Karol Adam Janulewicz Institute of Optoelectronics, Military University of Technology, Warsaw, Poland

### **SESSION III (Monday, 14:15 – 15:00) \*\*\*45 min**

III.1	<b>Non-linear response, ultrafast energy absorption and photoexcitation of bulk plasmon in silicon irradiated by intense ultrashort laser pulses</b> Tzveta Apostolova Institute for Advanced Physical Studies, New Bulgarian University, Sofia, Bulgaria
III.2	<b>Studies on laser plasma soft X-ray emission from a laser-irradiated gas puff target</b> Vassily Zakharov EATS, Orsay, France
III.3	<b>Table-top laser-induced plasma source for soft X-ray absorption spectroscopy</b> Matthias Müller Laser-Laboratorium Göttingen, Germany

### **SESSION IV (Tuesday, 9:30 – 10:45) \*\*\*75 min**

IV.1	<b>Soft x-ray photoabsorption spectra of photoionized CH<sub>4</sub> and CO<sub>2</sub> plasmas</b> Lazaros Varvarezos School of Physical Sciences and NCPST, Dublin City University, Ireland
IV.2	<b>Monte Carlo Simulations of Carrier Dynamics in Coupled Systems of Free and Localized Carriers in III-Nitrides</b> Oleg Kravcov Institute of Photonics and Nanotechnology, Vilnius University, Lithuania
IV.3	<b>Fine structure of SHI tracks in amorphous materials</b> Henrique Vazquez Institute of Physics and Department of Physics, University of Helsinki, Finland
IV.4	<b>Modelling of the ultrafast dynamics and surface plasmon properties of solids upon irradiation with mid-infrared femtosecond laser pulses</b> George Tsibidis Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology (FORTH), Crete, Greece
IV.5	<b>Optical coherence tomography (OCT) with nanometer axial resolution using laser-driven sources of soft X-rays and EUV</b> Przemyslaw Wachulak Institute of Optoelectronics, Military University of Technology, Warsaw, Poland

## SESSION V (Tuesday, 11:10 – 12:40) \*\*\*90 min

V.1	<b>High Power laser-plasma secondary sources and their potential applications in IPPL, access point of the Hellenic Research Infrastructure “HELLAS-CH”</b> Michael Tatarakis Institute of Plasma Physics & Lasers, Hellenic Mediterranean University, Crete, Greece
V.2	<b>Ultrafast laser-generated sound sources in air (laser-sound)</b> Konstantinos Kaleris Department of Electrical & Computer Engineering, University of Patras, Greece
V.3	<b>Multiphysics modelling and simulations from solid to plasma regime for MHD and PIC studies</b> Vasilis Dimitriou Institute of Plasma Physics & Lasers, Hellenic Mediterranean University, Crete, Greece
V.4	<b>TNSA and LWFA Particle-In-Cell simulations performance on the Greek National HPC facility – ARIS</b> Ioannis Tazes Institute of Plasma Physics & Lasers, Hellenic Mediterranean University, Crete, Greece
V.5	<b>Characterization and Modeling of Ionizing Radiation on MOSFETs</b> Mustafa Berke Yelten Electronics and Communications Department, Istanbul Technical University, Turkey

## POSTER SESSION (Monday, 15:00 – 18:00)

P1	<p><b>Reactive collisions of electrons with molecular cations: effects and application to H<sub>2</sub><sup>+</sup>, BeH<sup>+</sup> and their isotopomers</b></p> <p>Nicolina Pop Department of Fundamental of Physics for Engineers, Polytechnic University Timisoara, Romania</p>
P2	<p><b>Modelling of laser triggered capillary discharge as a coherent EUV source at 13.38nm wavelength</b></p> <p>Serge Zakharov EATS, Orsay, France</p>
P3	<p><b>Analytical and numerical analysis of the plasma evolution in air generated by nanosecond laser pulses</b></p> <p>Violeta Petrovic Faculty of Science, University of Kragujevac, Serbia</p>
P4	<p><b>Modelling of Laser Induce Optical Breakdown in Skin</b></p> <p>Carlos Molpeceres Laser Centre, Polytecnic University of Madrid, Spain</p>
P5	<p><b>Differences in the single femtosecond laser pulse ablation between bimetallic Al/Ti and Ti/Al nano-layers</b></p> <p>Biljana Gaković Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia</p>
P6	<p><b>Static and dynamic femtosecond laser modifications of Ti/Zr multilayer thin films</b></p> <p>Suzana Petrovic Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia</p>
P7	<p><b>DFT calculations of hole-type defects in neutron irradiated MgAl<sub>2</sub>O<sub>4</sub></b></p> <p>Alexander Platonenko Institute of Solid State Physics, University of Latvia, Riga, Latvia</p>
P8	<p><b>Ion impact induced chemical changes in ices of astrophysical interest</b></p> <p>Zoltán Juhász Institute for Nuclear Research, Debrecen, Hungary</p>
P9	<p><b>Characterization of Nanocomposites by use of Photon Echo Methods</b></p> <p>Olga Fedotova Scientific-Practical Materials Research Centre of National Academy of Sciences, Minsk, Belarus</p>
P10	<p><b>Spectral analysis of EUV/SXR emission from laser produced plasma in double gas puff targets</b></p> <p>Antony José Arikatt Institute of Optoelectronics, Military University of Technology, Warsaw, Poland</p>
P11	<p><b>X-ray absorption spectroscopy based on pulsed laser plasma soft X-ray source</b></p> <p>Tomasz Fok Institute of Optoelectronics, Military University of Technology, Warsaw, Poland</p>
P12	<p><b>Development and characterization of high density gas based targets for laser matter experiments</b></p> <p>Łukasz Węgrzyński Institute of Optoelectronics, Military University of Technology, Warsaw, Poland</p>

P13	<b>Automated search for new I-V-VI(2) thermoelectric materials</b> Fernando Nogueira Department of Physics, University of Coimbra, Portugal
P14	<b>Electronic effects in large-scale atomistic simulations of irradiation events</b> Andrea Sand Department of Physics, University of Helsinki, Finland
P15	<b>Long-gap laboratory atmospheric discharge</b> Alexandr Frolov Institute of Plasma Physics Czech Academy of Sciences, Prague, Czech Republic
P16	<b>Nanoscale structuring, analysing and imaging with light - exciting challenges at LLG</b> Matthias Müller Laser-Laboratorium Göttingen, Germany
P17	<b>Research activities in IPPL (Institute of Plasma Physics &amp; Lasers)</b> Ioannis Tazes <sup>1</sup> & Mr Konstantinos Kaleris <sup>2</sup> <sup>1</sup> Institute of Plasma Physics & Lasers, Hellenic Mediterranean University, Crete, Greece <sup>2</sup> Department of Electrical & Computer Engineering, University of Patras, Greece