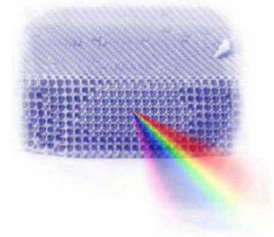


University of Belgrade
Institute of Physics Belgrade
Kopaonik, March 12-15, 2023



Book of Abstracts
16th Photonics Workshop
(Conference)



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Conference program**Sunday, March 12th****Chairman: Branislav Jelenković**

16.00 – 16.30	Registration & opening
16.30 - 17.00	Goran Mashanovich <i>Mid-Infrared Silicon Photonics for Sensing</i>
17.00 - 17.20	Bratislav Marinković <i>"Photoelectron" Spectroscopy by Electron Impact: Scattered and Ejected Electrons</i>
17.20 – 17.40	Danka Stojanović <i>Data enrichment and calibration for PM 2.5 low-cost optical sensors</i>
17.40 – 18.00	Dušan Božanić <i>Valence Band Electronic Structure of Azobenzene-Functionalized Gold Nanoparticles</i>
18.00 – 18.15	Duška Popović <i>Analysis of the photoelectron energy spectra at resonant two-photon ionization of hydrogen atom by intense short laser pulses</i>
18.15 – 18.30	Vladimir Damljanović <i>Atlas of electronic band structures in two-dimensional materials</i>

Monday, March 13th**Chairman: Zoran Grujić**

16.00 - 16.30	Refreshment
16.30 - 17.00	Ferruccio Renzoni <i>Electromagnetic Induction Imaging with Atomic Magnetometers: Pushing the Boundaries</i>
17.00 - 17.20	Vladimir Đoković <i>Gold-riboflavin hybrid nanostructures as possible photodynamic therapy agents</i>
17.20 – 17.40	Nikola Stojanović <i>Femtosecond laser spectroscopy for Exploration of Space</i>
17.40 – 17.55	Merve Ekmekçioğlu <i>Properties of Multilayer ZTO/Ag/ZTO Thin Film Electrodes Deposited by Magnetron Sputtering</i>
17.55 – 18.10	Petar Atanasijević <i>Thermoelectric temperature control of Morpho butterfly wings used for radiation sensing</i>
18.10 – 18.25	Miloš Davidović <i>Combining size distribution spectrums of ambient aerosols using equivalent optical properties of nanosized particles – selected examples from the Bay of Kotor</i>

Chairman: Bratislav Marinković

20.00 - 20.30	Robert Loew <i>Making hot atoms interact</i>
20.30 - 20.50	Predrag Tadić <i>Photoplethysmogram as a source of biomarkers for AI-based diagnosis of heart failure</i>
20.50 - 21.10	Gulnur Aygun Ozyuzer <i>The Effect of ZTO Interlayer Between LCO and LLZO Used in All Solid State Batteries</i>
21.10 - 21.25	Mirjana Stojanović <i>Localized modes in linear flux dressed two-dimensional plus lattice</i>
21.25 – 21.40	Nataša Bon <i>The Investigation of The Central Activity and Stellar Population Parameters in Active Galactic Nuclei</i>
21.40 – 22.00	Edi Bon <i>Spectroscopic modeling of supermassive binary black hole orbits in active galactic nuclei</i>
22.00 – 22.15	Aleksander Kovačević <i>Beam modification during propagation through aqueous microalgae suspension of interest to waveguiding</i>

Tuesday, March 14th**Chairman: Ljupčo Hadžievski**

16.00 - 16.30	Refreshment
16.30 - 17.00	Vladan Vuletić <i>Quantum Simulation and Computation with Neutral Atoms</i>
17.00 - 17.20	Branislav Jelenković <i>Squeezed light by FWM in alkali vapor – generation and application</i>
17.20 – 17.40	Caterina Credi <i>Straightforward integration of SERS technology within novel opto-fluidic devices for rapid liquids probing with high sensitivity</i>
17.40 – 18.00	Sara Nocentini <i>Temperature-controlled polymer nanopatterning for 4D tunable photonics</i>
18.00 – 18.15	Jovana Petrović <i>Ultra-low-loss broadband multiport optical splitters</i>
18.15 – 18.35	Mehtap Ozdemir <i>Optimization of Large Area Thin Films for All Solid State Electrochromic Devices</i>

Chairman: Ivana Drvenica

20.00 - 20.30	Srdjan Antic <i>The Role of Physics in Modern Neuroscience</i>
20.30 - 20.50	Ljiljana Nikolić <i>Application of optogenetics for studying neuronal activity via glial photostimulation</i>
20.50 - 21.05	Katarina Milićević <i>In vitro testing of genetically encoded voltage indicator ArcLightD for recording spontaneous electrical activity of cortical neurons</i>
21.05 – 21.25	Dejan Pantelić <i>Thermal radiation imaging of insects using lockin techniques</i>
21.25 – 21.40	Vladimir Atanasoski <i>Autocorrelation for denoising biomedical signals</i>
21.40 – 21.55	Kolja Bugarski <i>Localized modes in SSH photonic lattice in the presence of defects and local nonlinearity</i>
21.55 – 22.15	Dragan Lukić <i>Proposal for a new surveillance system for military vehicles and a new crew arrangement</i>

Wednesday, March 15th**Chairman: Dušan Božanić**

16.00 - 16.30	Refreshment
16.30 - 17.00	Lutfi Ozyuzer <i>Chiral Devices for Terahertz Waves Based on Tunable Metamaterials</i>
17.00 - 17.20	Yasemin Demirhan <i>Terahertz Metamaterials and Multispectral Terahertz Plasmonic Detectors</i>
17.20 – 17.40	Željko Šljivančanin <i>Computational modeling of magnetism induced in nonmagnetic 2D materials</i>
17.40 – 17.55	Nurcin Karadeniz <i>The Characterizations of Thin Film Filters for Far UVC 222 nm Excimer Lamps</i>
17.55 – 18.10	Milica Nedić <i>Impact of the vortex distortion phase on the efficiency of lasing zero-mode</i>
18.10 – 18.25	Nikola Vuković <i>Modeling of optical properties of novel terahertz photonics quantum well heterostructures</i>

Chairman: Aleksander Kovačević

20.00 - 20.20	Zoran Grujić <i>Heading error of Free Alignment Precession optically pumped magnetometer</i>
20.20 - 20.40	Theo Scholtes <i>A compact pump-probe optically pumped magnetometer system with different valence state</i>
20.40 - 20.55	Jonas Hinkel <i>Optically pumped magnetometer aiming for highest accuracy</i>
20.55 - 21.10	Tim Kügler <i>Functionalization of microfabricated cesium vapor cells for optically pumped magnetometers</i>
21.10 – 21.25	Marija Čurčić <i>Response of a scalar Mx magnetometer to the transverse modulation of magnetic field</i>
21.25 – 21.40	Aleksandra Milenković <i>Affordable VCSEL diode laser for high resolution spectroscopy of cesium D1 line</i>
21.40 – 21.55	Miloš Subotić <i>Frequency Estimating Device for Optically Pumped Magnetometer</i>
21.55 – 22.10	Andrej Bunjac <i>Analysis of the dynamic RF projection phase in True Scalar Cs Magnetometers</i>

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Modeling of optical properties of novel terahertz photonics quantum well heterostructures

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Abstract. In this contribution, we present our recent work on modeling intersubband transitions in the conduction band of semiconductor-based quantum well structures [1], [2]. Particularly interesting are possibilities offered by ZnO/ZnMgO and La-doped BaSnO₃/BaO perovskite-oxide for the realization of room temperature oxide-based THz quantum well optoelectronic devices due to their advantageous physical and chemical properties [3], [4]. The electronic structure is calculated self-consistently by solving the Schrödinger–Poisson system of equations. A significant change of the transition energy due to the depolarization shift is also considered in cases when high doping is present. The charge-induced coherence due to the strong dipole-dipole Coulomb interaction between intersubband transitions leads to the formation of multisubband plasmons and a complete quantum model [5] based on the dipole representation must be used to calculate absorption spectra.

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