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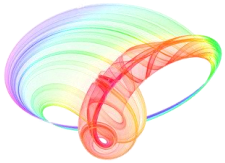

PHOTONICA2019

The Seventh International School and Conference on Photonics, 26 August – 30 August 2019, Belgrade, Serbia

& Machine Learning with Photonics Symposium (ML-Photonica 2019)

& ESUO Regional Workshop

& COST action CA16221

Editors: Milica Matijević, Marko Krstić and Petra Beličev

Belgrade, 2019

ABSTRACTS OF TUTORIAL, KEYNOTE, INVITED LECTURES, PROGRESS REPORTS AND CONTRIBUTED PAPERS

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Technical Assistance
Danka Stojanović and Goran Gligorić

Publisher
Vinča Institute of Nuclear Sciences
Mike Petrovića Alasa 12-14, P.O. Box 522
11000 Belgrade, Serbia

Printed by
Serbian Academy of Sciences and Arts

Number of copies
300

ISBN 978-86-7306-153-5

PHOTONICA2019 (The Seventh International School and Conference on Photonica-www.photonica.ac.rs) is organized by Vinča Institute of Nuclear Sciences, University of Belgrade (www.vinca.ac.rs), Serbian Academy of Sciences and Arts (www.sanu.ac.rs), and Optical Society of Serbia (www.ods.org.rs).

Institute of Nuclear Sciences Vinča

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Optical Society of Serbia

Other institutions that helped the organization of this event are: Institute of Physics Belgrade, University of Belgrade (www.ipb.ac.rs), School of Electrical Engineering, University of Belgrade (www.etf.bg.ac.rs), Institute of Chemistry, Technology and Metallurgy, University of Belgrade (www.ihtm.bg.ac.rs), Faculty of Technical Sciences, University of Novi Sad (www.ftn.uns.ac.rs), Faculty of Physics, University of Belgrade (www.ff.bg.ac.rs), and Faculty of Biology, University of Belgrade (www.bio.bg.ac.rs). Joint event "Machine learning with Photonics Symposium" has been co-organized with programme partners H2020-RISE-CARDIALLY, H2020 – MULTIPLY and H2020-EID-FONTE.

PHOTONICA2019 is organized under auspices and with support of the Ministry of Education, Science and Technological Development, Republic of Serbia (www.mpn.gov.rs). PHOTONICA2019 is supported and recognized by OSA - The Optical Society (www.osa.org), Integrated Initiative of European Laser Research Infrastructures Laser Lab-Europe (www.laserlab-europe.eu) and European Physical Society (www.eps.org).

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Numerical study of the supercontinuum generation in the telecommunications windows in photonic crystal fiber

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This research explores a supercontinuum (SC) generation in silica based highly nonlinear photonic crystal fiber of near infrared window, suitable for application in the field of telecommunications [1]. Results obtained here could be of interest in attempts to improve the characteristics of multi-wavelength sources for dense wavelength division multiplexing (DWDM) systems. We study numerically SC dynamics in both spectral and temporal domain in three different optical windows, at referent wavelengths of 835nm, 1300nm and 1550 nm. The dependence of SC properties on the input pulse power, shape and the value of the chirp is investigated in details. It has been shown that the most intense spread of SC spectrum at fiber output is obtained in the third optical window, while the input signal shape, power and duration stayed unchanged [2]. The shape of the initial pulse was the most influential in the second optical window, where the simulated SC has flat and smooth profile, covering the wavelength range from 1000 nm to 2000 nm. In addition, we examine the SC spectrum coherence in all of the three optical windows with respect to different input pulses. On the other hand, the richest SC dynamics is observed in the first window, where the appearance of high intensity events of the rogue wave type is reported [3].

REFERENCES

[1] J. M. Dudley, J. R. Taylor, *Supercontinuum Generation in Optical Fibers*, CUP, New York, 2010.
[2] M. Veljkovic et al., Laser Phys. 28, 095109, (2018).
[3] M. Veljkovic et al., submitted to J. Opt. Soc. Am. B, (2019).