Contribution ID: **313** Type: **Oral talk (15 min + 5 min questions)**

Compton X-ray source based on 50-MeV accelerator and its applications

Friday, 15 July 2022 10:20 (20 minutes)

Laser-electron X-ray source based on inverse Compton (Thomson) scattering is a novel type of high spectral brightness X-ray sources. The state-of-the-art design of electron accelerators and high power lasers had paved the way for a construction of these compact facilities that are able to produce a nearly synchrotron-quality X-ray radiation for material and life science studies and many other fields [1, 2]. The essential added values are the generation of picosecond X-ray pulses and tunable output photon energy spectrum with a potential extension towards the region of gamma radiation.

The presentation deals with the main principles, layouts and possible applications of Compton X-ray sources based on a 50-MeV electron accelerator specified for production of X-ray photons with the energy of 20-45 keV. The design options include a utilization of an electron storage ring for high average photon flux generation[3].

1. I .A. Artyukov, E.G. Bessonov, M. V. Gorbunkov, Y. Y. Maslova, N. L. Popov, and A. V. Vinogradov, Laser and Particle Beams 34, 637 (2016).
2. I. A.Artyukov, E. G. Bessonov, R. M. Feshchenko, M.V.Gorbunkov, Yu. Ya. Maslova, N.L Popov, N.V.Dyachkov, A A Postnov, S.L. Vinogradov and A.V.Vinogradov, Journal of Physics: Conference Series 784, 012002 (2017).
3. L. Ovchinnikova, V. Shvedunov, A. Mikhailichenko, E. Bessonov and M. Gorbunkov, A comparative study of low energy compact storage rings for a Thomson scattering X-ray source. In 7th Int. Particle Accelerator Conf.(IPAC'16), Busan, Korea, May 8-13, 2016.

The speaker is a student or young scientist

No

Section

1. Design and development of charged particle accelerators and ionizing radiation sources

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Session Classification: Design and development of charged particle accelerators and ionizing radiation sources