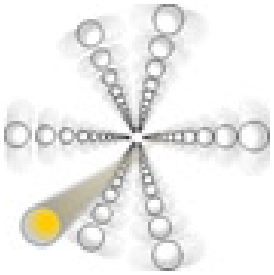

Contribution ID: **16** Type: **not specified**

Time Oscillations of the Intensity of Parametric and Diffracted Channeling X-Ray Radiation

Monday, 24 September 2012 16:00 (25 minutes)

The time evolution of parametric X-Ray radiation (PXR) and Diffracted Channeling X-Ray Radiation (DCR) produced by a relativistic charged particle passing through a crystal is studied. Formulas describing this processes are derived.
It is shown that the conditions can be realized under which parametric X-ray radiation and DCR lasts much longer than the particle flight time through the crystal. The PXR radiation pulse emitted at large angles with respect to particle velocity consists of two strong oscillating diffraction peaks. Such pulse form differs noticeably from that calculated using the kinematic approximation.
Total duration of the X-ray pulse can reach tens of picoseconds. Thus, a crystal is a high-quality resonator.
Modern X-ray detectors providing picosecond and femtosecond time resolution allow a detailed experimental investigation of a complicated time structure of parametric and DCR pulses generated by electron bunches available with modern acceleration facilities.

Primary author: Prof. BARYSHEVSKY, Vladimir (Research Institute for Nuclear Problems)

Co-authors: Mrs GURINOVICH, Alexandra (Research Institute for Nuclear Problems); Mr ANISHCHENKO, Sergei (Research Institute for Nuclear Problems)

Presenter: Prof. BARYSHEVSKY, Vladimir (Research Institute for Nuclear Problems)

Session Classification: S2.1 Channeling Radiation & Related Fenomena

Track Classification: Channeling Radiation & Related Phenomena