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Coherent production electron - positron pairs in channeled state by photon

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The solution of the Dirac equation for the electron (positron) in a continuous potential of the crystal axis taking into account the periodicity of the crystal in the direction of the axis was found [1].

In a present report using those wave functions we theoretical study the coherent photo-production of e^+e^- pairs by photons in the crystal taking into consideration the effect of channeling of created particles. Calculation shows that channeling of created particles result in a splitting of the coherent peak and changes its position.

It is similar to combined effect in coherent bremsstrahlung from electrons and positrons [2-4]. For the first time combined effect in coherent bremsstrahlung from electrons was experimentally recorded in [2]. Theory of this effect was developed in [3] for planar channeled positrons [3] and for axially channeled electrons [4].

1. H. A. Olsen and Yu.P. Kunashenko, Physical Review A, 56 (1997) 527.
2. K.Yu. Amosov, I.E. Vnukov, G.F. Naumenko, A.P. Potulitsin, V.P. Saruchev, JETP Lett. 55 (1992) 612.
3. Yu.P. Kunashenko, J. Phys: Conf. Ser. 517 (2014) 012029.
4. Yu.P. Kunashenko, Nucl. Instr. Meth. B 355 (2015) 110.

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