Contribution ID: **20** Type: **poster**

Study of the evolution of populations of transverse energy levels during channeling of weakly relativistic positrons in hexagonal crystals

Monday, 9 September 2024 18:30 (1 hour)

In this work, as a result of the numerical solution of the system of kinetic equations for weakly relativistic positrons channeled both along the basal and prismatic planes and along the c-axes in the hexagonal crystals under study, the populations of quantum levels of transverse energy are found as a function of the longitudinal coordinate. The widths of levels and the probabilities of transitions between them are calculated within the framework of nonstationary perturbation theory by analogy with calculations carried out for electrons. Based on these data, the structures of radial profiles are calculated at various distances from the entrance to the channels, with the help of which the lengths of dechanneling can be determined.

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Session Classification: Poster Session 1