On the particles acceleration in the crossed fields [[1]](#footnote-1)\*)

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Timofeev A.V.

National Research Center “Kurchatov Institute”, Timofeev\_\_AV@nrcki.ru

This work was initiated by paper [1], which devoted to the problem of particles acceleration in the crossed fields. Our analysis us based on the relations, which characterize the particles motion in the drift approximation [2,3]. It is noted, that the particles can be accelerated in the system, which was proposed for the inverse process – transformation the charged particles energy in the electric energy (recuperation) [4]. The magnetic field of the such system has small differences with the field of the direct current. In the [1] was proposed another magnetic field configuration for the particles acceleration – the sum of the homogeneous field and screw field. The step of the screw must diminishes along axe. In this case the accelerated particles interaction with the constant electric field can be considered as resonance Cherenkov interaction. The keeping of the resonance at the acceleration obliges to autophasing phenomenon which is consequence of the adiabatic invariant constancy [5]. It is constant if the oscillation frequency along magnetic field is sufficiently large.

References

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVII/Mu/ru/AM-Timofeev.docx) [↑](#footnote-ref-1)