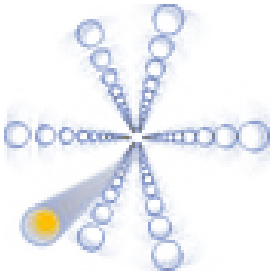

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PS3-18 Beam Reflection by Planar and Curved Laser Channels

Thursday, 9 October 2014 17:00 (1h 30m)

Since the first work on the phenomenology of charged beams channeling in the field of aligned crystals the interest of physicists to this feature of the beam motion in solids is defined by the possibilities of beam manipulation that aims in the beam shaping (crystal collimation) as well as in the radiation release (channeling radiation) [1, 2, 3].

Known and recent studies on interaction of charged particles with laser beams have demonstrated that at specific conditions in combined laser fields well defined potential channels, similar to those in crystals by the potential depth and gradient, are formed [4, 5, 6]. These potential channels could be used to trap the charged beams, both relativistic and nonrelativistic, the beams become channeled in the field of standing laser waves.

In this work we are going to report first results on the deflection of charged beams by multichannel laser structure (”laser sandwich”). Studies on the dynamics of charged particles reflection by such a surface multilayer, which consists of multiple parallel laser channels, proves the feasibility of efficient beam reflection not only by the flat surfaces but by the curved ones. We have shown that in the case of curved laser multichannel structure the angle of deflection could much exceed the angel for the flat surface. Our calculations have also revealed the efficient beam filtering by the particles energy.

Finally, in our work we will discuss various applications of new laser technique for beam deflection.

1 J. Lindhard // K. Dan. Vidensk. Selsk. Mat.-Fys. Medd. –1965. –34 #14
2 E.N. Tsyganov // Fermilab TM-682 - August 1976
3 M.A. Kumakhov // Phys. Lett. A. - 1976 - 57. 17
4 E.N. Frolov, A.V. Dik, and S.B. Dabagov // Nucl. Instr. Meth. B. –2013. –309. 157
5 E.N. Frolov, A.V. Dik, and S.B. Dabagov // J. Phys.: Conf. Ser. - 2014 - 517 012002
6 S.B. Dabagov, A.V. Dik, and E.N. Frolov // arxiv.org e-Print: arXiv:1404.3307

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