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PS3-10 Channeling of Fast Ions in Nanotubes with Weak Chaotic Curvature

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A great number of papers are devoted to theoretical investigation of the atomic particle channeling in nanotubes. As a rule the nanotubes with ideal structure are considered for which thin effects connected with the scattering on atoms and electrons are taken into account. Actually the real nanotubes always have imperfections one of them is their curved shape. In this work we attempt to simulate the random curvature of the tubes within the framework of the theory of random processes. The continuous potential approximation are used for describing the interaction of particles with the walls of the nanotubes. Effect of curvature of the tube on the motion of channeled particles was taken into account by introducing an effective force of inertia, which is determined by the local curvature of the tube at the current value of the longitudinal coordinates. When correlation length is much smaller than the characteristic distance at which in the absence of random deviations the ion trajectory significantly changing, one can go to the kinetic description of ion motion in the transverse plane.

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