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## Generation of Plasmons with quantum charged fast oriented particle

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The theory of the generation of the single-particle and collective excitations in a crystal by a fast charged quantum oriented relative to the crystallographic axes particle is constructed. The dependence of the intensity of the generation of excitations in the crystal depending on the level of the transversal both sub barrier and over barrier movement is obtained. It is shown that the loss of transverse energy by the fast quantum charged particle moving in the potential of the curved crystal is leading to the effect of the volume capture of such particles in the crystal. Mathematical modeling of the various modes both of the volume capture and volume reflection of fast charged particles in a bent crystal is carried out.

### Summary

It is shown that the loss of transverse energy by the fast quantum charged particle moving in the potential of the curved crystal is leading to the effect of the volume capture of such particles in the crystal.

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