Abstracts

Radiation from a Uniformly Moving Charge in an Anisotropic Plasma

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The radiation from a point charge moving uniformly in a plasma is investigated when the charge is moving in the direction of an external magnetic field. In general there are two modes, for each of which all the components of the electric and magnetic field are present. The two parameters of interest in this problem are the ratio u/c/sub 0/ of the velocity of the charges to the free-space velocity of electromagnetic waves and the ratio R of the gyromagnetic frequency to the plasma frequency of the electrons. For two sets of values of these parameters the frequency and the angular spectrum of the emitted radiation are obtained. In certain cases, as many as three Cerenkov rays are found to propagate in the same direction; these multiple rays, however, correspond to different frequency components and to different modes of propagation. The motivation for this investigation is indicated briefly.

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