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Polarization and Radiation Generated by Moving Charge in Dielectric Tube

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At the present work we consider the problem of electromagnetic radiation generated in the uniform motion of a point charge along the dielectric tube, on a small distance from the axis.

At the presence of a moving charge inside the tube will be excited as the own frequencies, and all the others. The problem is solved using Maxwell's equations for the vortex and potential fields. By eliminating one of the fields - magnetic or electric - we obtain the corresponding second-order equation for each of them. Since the equations for the magnetic field the problem with the current delocalization is absent, it is more prefer to calculate the component of magnetic field, and then expressing the components of the electric field through them.

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