

CHARACTERISTICS OF SMITH-PURCELL RADIATION IN MILLIMETER AND SUB-MILLIMETER WAVELENGTH REGION

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Investigations of the Smith-Purcell radiation (SPR) were began with non-relativistic electron beams with some unexpected experimental results. Further the experimental investigations were performed with relativistic electron beams for application to beam diagnostics. Large discrepancy between different theoretical models significantly increases the role of experimental studies of this phenomenon. In this report we present some problems and features of experimental investigations of SPR in millimeter and sub-millimeter wavelength region. The problems of prewave zone and coherent effects are considered. The shadowing effect, focusing of radiation using a parabolic SPR target and effect of inclination of target strips were investigated with moderately relativistic electron beam.

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