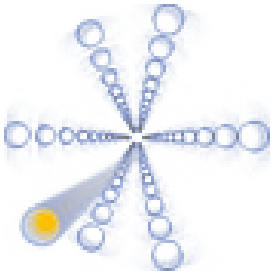

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PS2-14: Full Structure of the Spectra of Polarization Bremstrahlung(PBR) by Fast Electron on Atoms

Tuesday, 7 October 2014 17:00 (1h 30m)

PBR is generated as result of the scattering own Coulomb's field of fast electron on matter electrons. This field can be represented as a stream of virtual photons, scattering them on atomic electrons generates PBR. Therefore PBR is very sensitive to electronic configuration that is of obvious interest to PBR as a possible method of diagnostics of the matter structure of. However, the spectrum PBR is very complicated that is explained by the peculiarities of interaction of the Coulomb field of fast electron with atomic electrons. Really the effectiveness of the scattering of a virtual photon depends on their energy, and also parameters of atom electron shells in the medium. So in the scattering of soft photons with energy smaller than the energy of the K-shell, photons do not provide the atomic electrons their energy and scattered on the atom as on the object if the effective mass was equal to the atom, keeping its frequency (see the effect Franck-Hertz). The same picture is observed with photons with energies that do not match the energies of intra-atomic transitions. The coincidence of the energy of photons and intra-atomic transitions may expect the appearance of the spectral peaks. Concurrently with radiation on linked in the atom electrons for photons with energies larger ionization thresholds will be observed the process of scattering on virtually free atomic electrons. Thus, the analysis PBR should consider the full range of processes, although in the literature only the last processes are usually considered. In the paper contribution of the reviewed processes is discussed.

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