J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Quantum-Wiggler electrodynamic identification of nuclear electromagnetic pulse as being free-electron two-quantum magnetic-Wiggler Bremsstrahlung

Shang H Kim
Colorado State University, USA

The electron thermal energy k*T, where k and T are Boltzmann's constant, and temperature, respectively, can be viewed as being the uncertainty in the electron energy, ΔE. When α >> ΔE/h=k*T/h >> f, where f and α are the radiation frequency and the rate of the transition accompanied with the radiation, respectively, the radiation power from an electron is given by P= ΔE*f=k*T*f [1,2,3]. We assume that a spatially non-uniform magnetic field is represented by its most dominant mode, and calculate the transition rate of free-electron two-quantum magnetic-wiggler bremsstrahlung (FETQMWB) driven by the field of this mode and the electron's intrinsic motivity to change its internal configuration through spontaneously emission. We find that α >> k*T/h >> f is satisfied in the plasma generated by nuclear explosion, and formulate the total radiation power in terms of plasma and magnetic field parameters. We envision a scheme to generate a super strong electromagnetic pulse (EMP) of FETQMWB by compressing a high-temperature high-density electron beam to become a beam of thermonuclear temperature and ultra-dense beam with a pulsed periodic axial magnetic field in a theta-pinch-like configuration.

kim_shang_hoo@hotmail.com