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Radiation from a Charged Particle Rotating Around a Ball of a Dispersive Matter

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The results of theoretical investigations of the spectral distributions of the radiation generated by an electron rotating around a ball of a dispersive matter, in vacuum, are presented. Previously, for non dispersive dielectric ball was shown that for certain values of the problem parameters, at certain harmonics, the electron may generate radiation field quanta exceeding in several dozens of times those generated by electron rotating in a continuous and transparent medium having the same real part of permittivity as the ball material (resonant radiation). In this work we show that by choosing the dispersion law it is possible to achieve the generation of "resonant" radiation simultaneously at several neighboring harmonics.

Primary authors: SAHARIAN, Aram (Yerevan State University, Yerevan, Armenia); MNATSAKANYAN, Armine (Institute of applied problems of physics NAS RA); MKRTCHYAN, Artak (Institute of applied problems of physics NAS RA); MARGARYAN, Gayane (Institute of Applied Problems of Physics National Academy of Sciences of Armenia); HARUTYUNYAN, Hayk (Institute of Applied Problems of Physics of NAS RA); Dr KHACHATRYAN, Hrant (Institute of Applied Problems of Physics National Academy of Sciences of Armenia); GRIGORYAN, Levon (Institute of Applied Problems in Physics); DABAGOV, Sultan (Istituto Nazionale di Fisica Nucleare)

Presenter: MARGARYAN, Gayane (Institute of Applied Problems of Physics National Academy of Sciences of Armenia)

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