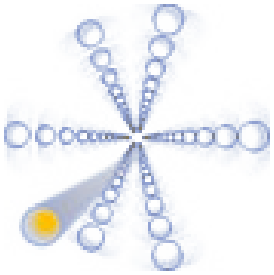

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Status of QED in Radiation by Relativistic Electrons in Matter

Monday, 6 October 2014 09:00 (45 minutes)

Radiation by relativistic electrons in matter, near matter or in external field, from Channeling to Smith-Purcell radiations, are compared regarding
1) the emission mechanisms. Is it direct or via medium polarization? classical or quantum ? target-coherent ? bunch-coherent ? dipole or non-dipole ? in weak or critical QED field ?
2) the radiation qualities: intensity, hardness, line width or cutoff frequency, collimation, polarization.
3) the theoretical methods: Equivalent Photons, Reciprocity theorem, Synchrotron-approximation, Born approximation, etc.
The conflict between classical sum rule and quantum recoil is arbitrated. Effects associated to formation length, target density, impact parameter and shadowing, for instance the LPM effect, are briefly discussed.

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