

## BETATRON RADIATION IN WAKEFIELDS BY LASER AND IN ASTROPHYSICS

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Electrons can be accelerated to high energies in the wakefield when a short pulse laser or beam passes through a plasma [1]. Transverse betatron oscillations of such electrons in the wakefield radiate X-ray or gamma-ray photons [2]. Electrons lose energy due to radiation damping effects [3]. Here we consider the betatron oscillations and radiation energy loss scenario by setting one off-axis energetic electron beam in the wake to understand the radiation characterization. We then apply this to the gamma ray burst (GRB) phenomenon from Blazar jets. We find that the acceleration process in such an object has important similarity to laser wakefield acceleration experiments [4]. Therefore, the above radiation processes from LWFA studies are an important guide to understand Blazars and GRBs.

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