

Stimulated Emission of Gamma Photon from Ultrashort Pulse Intense Laser-Solid-Target Interaction

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Abstract: The efficient production of energetic γ photons is a significant physical process in the relativistic ultrashort pulse laser-plasma inducing photonuclear action. Based on the interaction of laser-solid-target, an analytical theory on stimulated γ photon emission from a hot electron firing the target-nucleus is developed by a relativistic full quantum method. The emitting power or probability of γ photon in arbitrary space direction can be calculated for laser irradiating solid-target normally. It is valid only if the scatter-centre is immovable or its motion can be neglected compared with that of the scattered electrons.

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Key words: emission of gamma photon, ultrashort pulse intense laser, solid target, photon-nuclear radiation

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