

Abstract Submitted
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Laser-Neuron Interaction with Femtosecond Beat-Modulated 800-1200 nm Photon Beams, as the Treatment of Brain Cancer Tissue. Laser Neurophysics¹ V. ALEXANDER STEFAN, Stefan University — I propose a novel mechanism for the brain cancer tissue treatment: nonlinear interaction of ultrashort pulses of beat-photon, $(\omega_1 - \omega_2)$, or double-photon, $(\omega_1 + \omega_2)$,² beams with the cancer tissue. The multiphoton scattering is described via photon diffusion equation. The open-skull cerebral tissue can be irradiated with the beat-modulated photon pulses with the laser irradiances in the range of a few mW/cm², and repetition rate of a few 100s Hz generated in the beat-wave driven free electron laser.³ This highly accurate cancer tissue ablation removal may prove to be an efficient method for the treatment of brain cancer.

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²Maria Goeppert-Mayer, **Über Elementarakte mit zwei Quantensprüngen**, *Ann Phys* **9**, 273, 95. (1931).

³V. Alexander Stefan, **Laser Neurophysics**. 2010 **APS March Meeting**, V. Alexander Stefan, 2009 **APS March Meeting**; V. Stefan, B. I. Cohen, and C. Joshi, **Nonlinear Mixing of Electromagnetic Waves in Plasmas** *Science* 27 January 1989; V. Alexander Stefan, **Genomic Medical Physics: A New Physics in the Making**, (S-U-Press, 2008).

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