

Abstract Submitted
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Physics of the Brain. Prevention of the Epileptic Seizures by the Multi-photon Pulsed-operated Fiber Lasers in the Ultraviolet Range of Frequencies.¹ V ALEXANDER STEFAN, Institute for Advanced Physics Studies, Stefan University, IAPS TEAM — The novel study of the epileptogenesis mechanisms² is proposed. It is based on the pulsed-operated (amplitude modulation) multi-photon (frequency modulation) fiber-laser interaction with the brain epilepsy-topion (the epilepsy onset area),³ so as to prevent the excessive electrical discharge (epileptic seizure) in the brain. The repetition frequency, Ω , matches the low frequency (epileptic) phonon waves in the brain. The laser repetition frequency (5-100 pulses per second) enables the resonance-scanning of the wide range of the phonon (possible epileptic-to-be) activity in the brain. The tunable fiber laser frequencies, $\Delta\omega$ (multi photon operation), are in the ultraviolet frequency range, thus enabling monitoring of the electrical charge imbalance (within the 10s of milliseconds), and the DNA-corruption in the epilepsy-topion, as the possible cause of the disease.

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²E.M. Goldberg and D.A Coulter, Nat. Rev. Neurosci.14(5), 337 (2013).

³V. Stefan, B. I. Cohen, C. Joshi, *Science*, 243, 4890, (1989); Stefan et al., Bull. APS 32, No.9, 1713, (1987); Stefan, APS-March-2015, # P1.00099; Stefan, APS-March-2016, #M1.00310; V. Alexander Stefan, Neurophysics, *Stem Cell Physics, and Genomic Physics: Beat-Wave-Driven-Free Electron Laser Beam Interactions with the Living Matter*, (S-U-Press, La Jolla, CA, 2012).

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