

**FEL Based Gamma-Gamma Collider of TeV Energy Range, E.L. SALDIN,**

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M.V. YURKOV, JINR (Dubna) - Physical principles of operation of high energy photon linear colliders (PLC) based on the Compton backscattering of laser photons on high energy electrons are discussed. The main emphasis is put on the analysis of a possibility to construct the PLC with the centre of mass energy 0.5 - 2 TeV. Free electron laser (FEL) is considered as a source of primary photons. Proposed FEL system consists of a tunable FEL oscillator (output power ~1-10 MW) with subsequent amplification of the master signal in a FEL amplifier up to the power  $\sim 3 \times 10^{11}$  W. The FEL parameters are optimized, restrictions on the electron beam and FEL magnetic system parameters are formulated and problems of technical realization are discussed. It is shown that the FEL technique provides the most suitable way to construct photon linear collider on the base of future generation linear collider.