Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Gamma-ray Radiation From Plasma Bubble Hosing[1] BIFENG LEI, SERGEY RYKOVANOV , the Helmholtz Institute Jena — The CEP-dominated few cycle strong ( ) laser pulse could oscillate in a underdense plasma with a period [1], , where is the laser wavelength, is the laser critical density and is the initial plasma density. This oscillation further leads to the hosing-like oscillation of the formed plasma bubble [2] which, in turn, gives a very strong oscillation strength for the electrons trapped inside. With numbers of self-trapped electrons, this scheme is capable server as a strong and bright gamma-ray source. A stretched plasma bubble is achieved by firstly injecting a symmetric, moderately long ( ) and strong ( ) laser in to an underdense plasma. Then, many electrons can be self-trapped along with the bubble breaking due to the nonlinear plasma wave. The head erosion produces the few cycle pulse which enables the oscillation. **References:** [1] A. A. Silaev et al., Residual-Current Excitation in Plasmas Produced by Few-Cycle Laser Pulses, PhysRevLett.102.115005 (2009); [2] M. C. Kaluza et al., Observation of a Long-Wavelength Hosing Modulation of a High-Intensity Laser Pulse in Underdense Plasma, Phys. Rev. Lett. **105**, 095003 (2010).

[1]Work supported by Helmholtz Association (Young Investigators Group No. VH-NG-103)

Bifeng Lei
the Helmholtz Institute Jena

Date submitted: 10 Jul 2017 Electronic form version 1.4