

Abstract Submitted
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Gamma beams generation with high intensity lasers for two photon Breit-Wheeler pair production EMMANUEL D'HUMIERES, XAVIER RIBEYRE, OLIVER JANSEN, LEO ESNAULT, SOPHIE JEQUIER, JEAN-LUC DUBOIS, SEBASTIEN HULIN, VLADIMIR TIKHONCHUK, Univ. Bordeaux-CNRS-CEA, France, ALEX AREFIEV, TOMA TONCIAN, Univ. of Texas, Austin, USA, YASUHIKO SENTOKU, Univ. of Nevada, Reno, USA — Linear Breit-Wheeler pair creation is the lowest threshold process in photon-photon interaction, controlling the energy release in Gamma Ray Bursts and Active Galactic Nuclei, but it has never been directly observed in the laboratory. Using numerical simulations, we demonstrate the possibility to produce collimated gamma beams with high energy conversion efficiency using high intensity lasers and innovative targets. When two of these beams collide at particular angles, our analytical calculations demonstrate a beaming effect easing the detection of the pairs in the laboratory. This effect has been confirmed in photon collision simulations using a recently developed innovative algorithm. An alternative scheme using Bremsstrahlung radiation produced by next generation high repetition rate laser systems is also being explored and the results of first optimization campaigns in this regime will be presented.

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