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Observation of elastic photon-photon scattering events using collider based on Compton gamma sources.

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We present the design of a photon-photon collider based on Compton gamma sources for the observation of elastic γγ scattering.
Two symmetric relativistic electron beams produce two primary gamma rays through Compton back scattering with two high energy lasers.
The elastic photon-photon scattering is analysed by start-to-end simulations from the photocathodes to the detector. A new Monte Carlo code has been developed ad hoc for the counting of the QED events. Realistic numbers of the secondary gamma yield, obtained by using the parameters of existing or approved Compton devices, a discussion of the feasibility of the experiment and of the nature of the background are presented.

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