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Photon structure functions at the ILC energy range

The first measurement of the photon structure functions has been performed using the PLUTO detector at the DESY storage ring PETRA (1981). Following this pioneering work many experiments have been performed at all high energy e^+e^- and ep storage rings. In spite of many researches there are still a lot of issues to be addressed. The last papers containing the experimental data of the photon structure functions were published in 2005 (L3 experiment on LEP). New experimental data can be anticipated from the future linear e^+e^- collider ILC, which is now in a preparation phase. As the beam energy at the ILC will be higher than at LEP, it is expected that it will be possible to measure photon structure functions in a wider range of kinematic variables x, Q^2 . The classical way to measure the photon structure functions is the study of $e^+e^- \rightarrow e^+e^-$ X process, where X is the leptonic or hadronic final state. For the study of the QED and hadronic photon structure functions the simulations of two-photon processes were performed at ILC centre-of-mass energy using Monte Carlo generators and the ILCSoft package. The analysis used information related to the forward detectors, tracking detectors and calorimeters which are parts of the ILD detector concept.

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