

Parton distribution functions of positron in electron in QED

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A method of solving of QED evolution equations for parton distribution functions in the leading and next-to-leading orders is discussed. This method is a reduction to QED of the method of iterative solution of DGLAP equations in QCD. Spacelike parton distribution functions (PDFs) of positron in electron are calculated to the third order.

We consider process-independent PDFs $D_{e\bar{e}}$ which describe the probability density of finding massless partons (positron) inside electron.

The results can be used to calculate cross-sections of high-energy processes with electrons and positrons, such as electron-positron annihilation and scattering. These results are important for precise calculation of radiative corrections in QED and accurate predictions of high-energy processes on future colliders.

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