Contribution ID: **70** Type: **not specified**

Higher-order initial state radiation in e^+e^- annihilation

Tuesday, 13 June 2023 18:10 (20 minutes)

The studies of high-energy physics processes at future high-luminosity electron-positron colliders require very precise calculations of QED radiative corrections for construction of sufficiently accurate theoretical predictions of these processes. The bulk of effect is provided by higher-order radiative corrections enhanced by the so-called large logarithm $L = \ln\left(\frac{\mu^2}{m_e^2}\right)$ which depends on the factorization energy scale $\mu >> m_e$.
Radiative corrections in the leading and next-to-leading logarithmic approximations can be analytically calculated within the QED parton distribution functions approach. To calculate higher-order corrections we solve QED evolution equations by iterations. We calculated radiative corrections to the cross-section of electron-positron annihilation up to $O(\alpha^3 L^2)$ using this method. The results are relevant for physical programs of future high-energy electron-positron colliders including searches for dark matter.

Secondary category for the parallel session (optional)

Primary author: VOZNAYA, Uliana (JINR)

Co-author: Dr ARBUZOV, Andrej (JINR)

Presenter: VOZNAYA, Uliana (JINR)

Session Classification: Parallel: Collider Physics

Track Classification: Parallel Sessions: Collider Physics