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## **FEWZ: A Fully Exclusive Numerical Code for QCD and EW Correction to Drell-Yan Process**

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### **Abstract:**

The QED correction to hadron collider production of lepton pairs through the Drell-Yan process at next-to-leading order (NLO) is included in the new version of the simulation code FEWZ (Fully Exclusive W and Z Production). We calculate the contributions of the initial/final-state photon radiation (ISR/FSR) as well as the virtual photon+weak correction analytically, and the program is fully differential in the phase space of leptons and additional photonic radiation. It eliminates the need to unfold the FSR effect when comparing experimental data with the theoretical prediction given by the original FEWZ, which only includes the QCD corrections. We demonstrate the code by discussing the effects of photon recombination and different lepton masses. We also study the combined QCD and EW correction to lepton pair production and compare results with experimental data.

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