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Fast NNLO Implementation of the aSACOT scheme for DIS

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Mass-dependent quark contributions are of great importance to DIS processes. The simplified-ACOT-χ scheme includes these effects over a wide range of momentum transfers up to next-to-leading order in QCD. In recent years an improvement in the case of neutral current DIS has been achieved by using zero-mass contributions up to next-to-next-to-leading order (NNLO) with massive phase-space constraints. In this talk, we extend this approach to the case of charged current DIS and provide an implementation in the open-source code APFEL++. The increased precision will be valuable for understanding current and future neutrino experiments, the Electron-Ion-Collider and the studies of partonic substructure of hadrons and nuclei. A highly efficient implementation using gridding techniques extends the applicability of the code to the determination of parton distribution functions (PDFs).

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