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## First simultaneous Monte Carlo analysis of PDFs and fragmentation functions

*Tuesday, 24 March 2020 09:00 (30 minutes)*

We report on the first simultaneous extraction of unpolarized parton distributions and fragmentation functions from a global QCD Monte Carlo analysis of inclusive and semi-inclusive deep-inelastic scattering, Drell-Yan lepton-pair production, and single-inclusive  $e^+e^-$  annihilation data. We use data resampling techniques to thoroughly explore the Bayesian posterior distribution of the extracted functions, and use  $k$ -means clustering on the parameter samples to identify configurations that give the best description across all reactions. Our analysis reveals significant correlations between the strange quark density and the strange-to-kaon fragmentation function needed to simultaneously describe semi-inclusive  $K$  production data and inclusive  $K$  spectra in  $e^+e^-$  annihilation, and suggests a suppression of the strange quark distribution at intermediate  $x$  values.

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