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A Monte-Carlo Simulation of Double Parton Scattering

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Double parton scattering (DPS) is the process in which one has two separate hard scatterings in an individual proton-proton collision. In recent years much progress has been made towards the proper description of this phenomenon in QCD, including a consistent description of perturbative splittings that yield the parton pair in one or both protons, and a coherent framework for combining both double and single scattering without double counting. However, phenomenological predictions for DPS are often made using Monte Carlo codes or the "pocket formula", which are based on a simple picture of two uncorrelated scatters. I describe the development of a new Monte Carlo simulation for DPS, dShower, that is based on the modern theoretical picture. The structure of the DPS shower will be discussed, as well as the procedure to combine this shower with an SPS shower such that one can simulate both processes without double counting.

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