

Multi-Parton Interactions in event generators

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The term “Multiple Parton Interactions” applies to several quite different phenomena. A recent book on the subject titled “*Multiple Parton Interactions at the LHC*” (World Scientific, Sept 2018) contains actually two chapters:

- Hard MPI: The Double Parton Scattering (DPS).
- Soft MPI: Phenomenology and Description in MC Generators.

The second one will be discussed in this lecture. We discuss in particular theoretical concepts and their implementation in order to understand high multiplicity proton-proton phenomena, a “hot topic” at the moment (this is why all realistic event generators of high energy collisions have to deal with MPI).

To avoid confusion, we will refer to “soft MPI” as “Multiple Scattering”, also since these “soft MPI” cannot be viewed as collisions between $2 \times N$ well identified partons.

The contents of the lecture will be:

- I. Introduction
- II. Multiple scattering: Theory
- III. Multiple scattering: Model overview
- IV. Multiple scattering in EPOS
- V. Collectivity in EPOS
- VI. Flow in small systems
- VII. Recent developments