**Diffraction in Run I**

The diffractive mass ($M_D$) distribution of single diffraction in PYTHIA and PHOJET was modified to use the $M_D$ distributions from a model [2] by Kaidalov-Poghosyan. The Monte Carlo double diffractive fraction (DD) is adjusted until the separation of tracks.

Run II: AD detector

The AD detector consists of two stations with the quantum numbers of the protons. Instead, a colorless particle is produced. With these updated efficiencies and knowing the observed ratio of 1-arm to 2-arm events the fraction of SD to INEL events can be calculated.

The largest gap distribution from MC depends slightly on the SD fraction, a few iterations are needed to reach final values.

**Pseudo-tracks:**

- Association of the reconstructed vertex with a hit in SPD, FMD or V0. In 10% of cases there is no reconstructed vertex in a random vertex distribution generated from measured vertex distribution.
- Vertices are divided in 4 rings divided in 4 sectors in approach (12-24-24).
- If a V0 cell has signal + a V0 trigger hits is generated.

**AD Performance**

Excellent Beam-Gas separation

Highly sensitive: Satellites are clearly separated.

**References**
