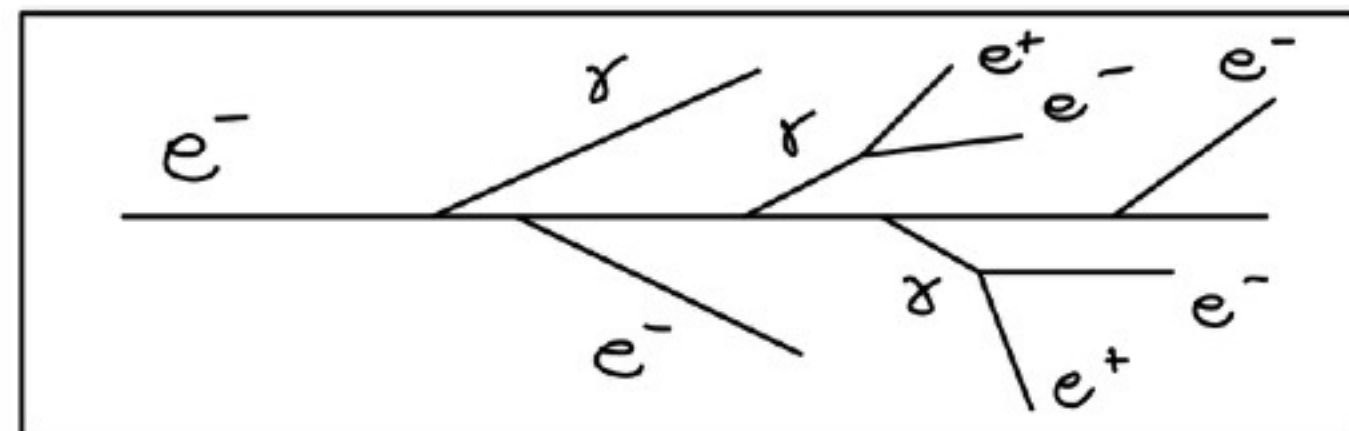# The Model

Stage 1: Pre-Training

Pre Training

Maschine Learning Input

Goal: Learning the Fundamental Structure of Particle Interactions Input of the model:

- **Voxel Energy, Voxel ID Labels, Global Event Features**

Toy Representation EM Shower

- ***hit_track_id***: Groups hits from the *same particle* as it propagates

- ***hit_primary_id***: Groups *all hits* that descend from the *same primary particle*

- ***hit_pdg***: physics-based grouping, groups hits by PDG code