

The Model

Stage 2: Fine-Tuning

Cool, but How?

A Two-Stage Training Strategy

- **Stage 1: Self-Supervised Pre-Training**
 - *Goal:* Force the model to learn a rich, physical representation of events.
 - *How:* A dual-objective Masked Autoencoder (MAE).
 - *Reconstruction Task:* Reconstruct masked (hidden) parts of the event.
 - *Contrastive Task:* Group hits that belong to the same voxel ID.
- **Stage 2: Supervised Fine-Tuning**
 - Goal: Adapt the "smart" pre-trained encoder to specific physics tasks.
 - How: Use the pre-trained weights as a starting point and fine-tune on the labeled dataset for classification and regression.