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Stereo crystal ECAL design and simulation studies

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This presentation proposes a novel design of stereo crystal ECAL, with the goal of creating a truly homogeneous calorimeter with 2D readout on the outer side of the long crystal bar, and obtaining the third position dimension information by allowing the adjacent layers to have opposite pointing angles with respect to the radius of the cylinder of the detector system, similar to human left/right eyes. A simulation using the CEPC software (CEPCSW) framework was conducted to assess the 3D position resolution, intrinsic energy resolution, as well as the separation of two particles using traditional clustering algorithms. Additionally, an end-to-end neural network was employed to resolve the shower information, similar to the human brain.

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