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AI enhanced event reconstruction and physics measurements: impact at CEPC Physics reach

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The Higgs factory is regarded as the highest priority future collider priority, as it could provide decisive data on our exploration to multiple profound mysteries, including the origin of mass, origin of matter, nature of dark matter, etc. Take the Circular Electron Positron Collider as an example, it is expected to deliver 4 million Higgs bosons, hundreds of Millions of W bosons, 4 Tera Z bosons, and potentially also 1 million top quarks in an extremely clean collision environment. The CEPC could well be the gateway towards the profound physics principles, by hundreds of promising observations though not only the precise Higgs measurements, but also Electroweak, Flavor physics measurements and direct New Physics signal hunting.

The extremely rich physics program at the CEPC poses stringent requirements on the detector performance, w

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