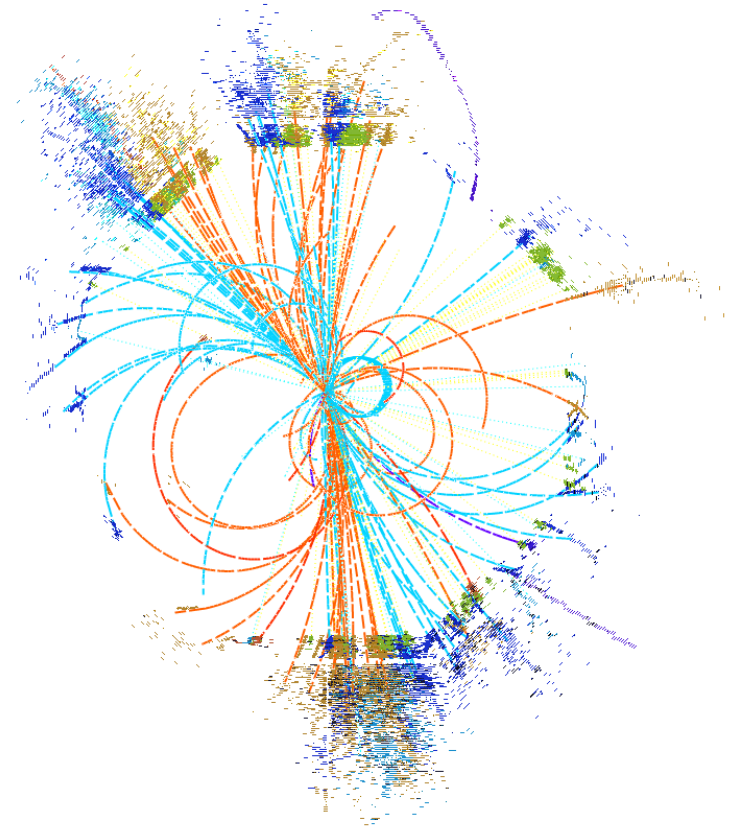# Plans for pilot production of physics samples

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CLICdp
WG detector optimisation
and validation

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CERN, Geneva

Introduction

Aim: Demonstrate/validate the overall readiness of the
new software chain and detector model

General Considerations:

• Keep the effort reasonable
→ a few (three) important physics channels

• One process for each CLIC energy stage, try to cover as many detector/reconstruction aspects as possible

• Reuse stdhep files from existing productions so that we can compare to the CDR detectors
(files being staged and copied to CERN-DST-EOS, thanks André!)

• Avoid highly boosted b-jets for now (→ talk by Daniel), $t\bar{t}$(H)

350 GeV: $e^+e^- \to ZH \to q\bar{q}H$

Used for two "flagship" precision Higgs analysis at the first CLIC stage:
model-independent σ(ZH) and H → bb/cc/gg

This will also the our first test case for the DELPHES fast simulation

Reconstruction checks:

• Jet reconstruction

• Separation of hadronic Z and Higgs decays

• Flavour tagging

• Recoil mass reconstruction

Final state with muons is easier (no single-W)

Reconstruction checks:

- Jet reconstruction, (boosted) W boson reconstruction

- Missing energy reconstruction

- Lepton identification
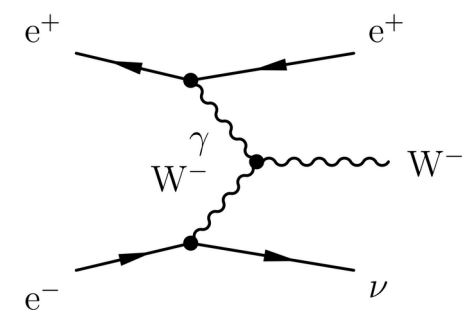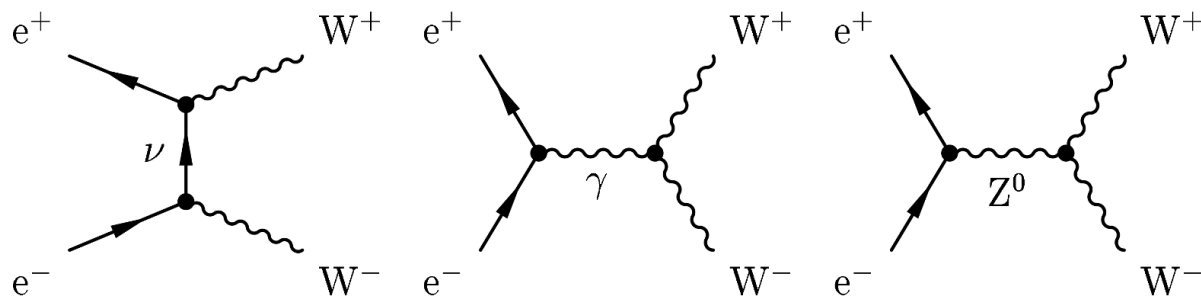
3 TeV: $e^+e^- \to HH\nu\bar{\nu}$

"Flagship" measurement of a 3 TeV CLIC collider
$\to$ one of the main motivations to extend the forward HCAL coverage in the new detector model as much as possible

Reconstruction checks:

- Forward Jet reconstruction

- Forward flavour tagging

- Missing energy reconstruction

Higgs polar angle in $e^+e^- \to HH\nu\bar{\nu}$ events