Contribution ID: **231** Type: **not specified**

Physics at the Compact Linear Collider (CLIC)

Thursday 19 April 2018 11:40 (20 minutes)

The Compact Linear Collider (CLIC) is a proposed high-luminosity linear electron-positron collider operated at energies from the top pair production threshold up to 3 TeV. With its high luminosity and flexible collision energy CLIC offers a wide spectrum of possible physics research, from precision measurement of Standard Model parameters to searches for new particles and new physics phenomena. At the first stage CLIC will be operated at 350-380 GeV collision energy. At this stage the emphasis is on precision top quark physics, e.g. via a threshold scan around 350 GeV, and on model-independent determination of the Higgs boson couplings by applying the recoil mass technique to Higgs-strahlung events. At the higher energy stages (1500 and 3000 GeV) Higgs bosons will be produced in large numbers via the WW-fusion process. This allows to measure the Higgs boson properties with high precision and to search for rare Higgs decays. The sensitivity to anomalous top quark form-factors is also improved at high collision energies. CLIC operation at 3 TeV will allow to perform direct and indirect searches for supersymmetry and other phenomena of new physics models. New particles can be discovered in a model-independent way almost up to the kinematic limit of 1500 GeV, while indirect evidences can be sensitive to new physics at the scale of tens of TeVs.

In this talk we present an overview of the CLIC physics potential using physics benchmark studies. The results are based on the full detector simulations for signal and background processes.

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Session Classification: WG7: Future of DIS

Track Classification: WG7: Future of DIS