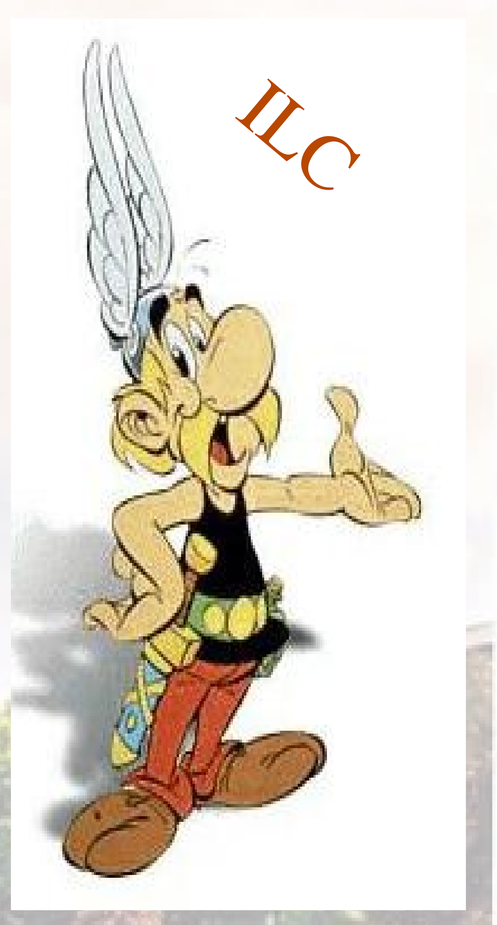
Durham University

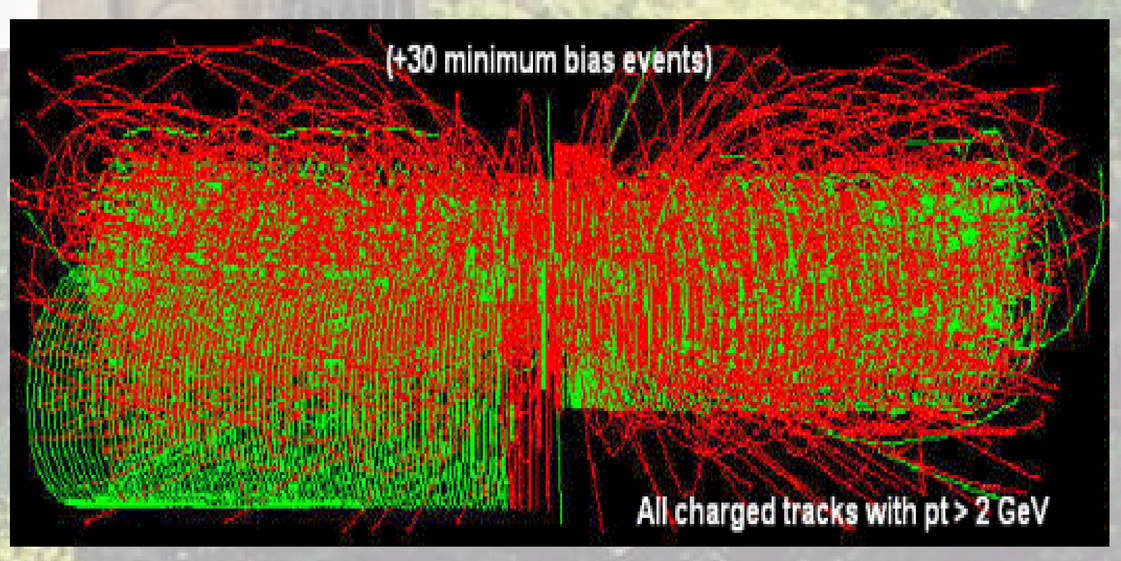
IP3

SYNERGY OF LHC AND ILC

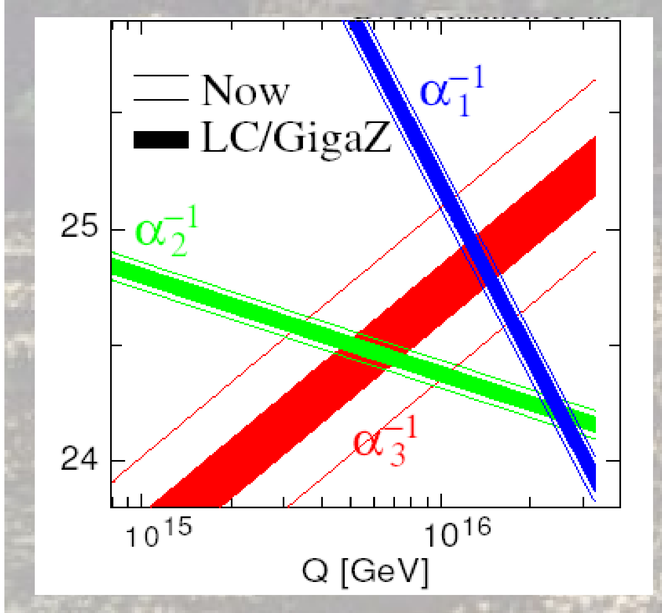
At the Large Hadron Collider (LHC), protons will be fired around the CERN ring. Protons are composite particles – each proton is composed of three quarks. The LHC is a discovery machine, and will shed light on high energy physics.

At the International Linear Collider (ILC), electrons and their anti-particles, positrons, will be fired towards each other and annihilate into pure energy. Since electrons are fundamental particles, these collisions will produce clean, clear signals.

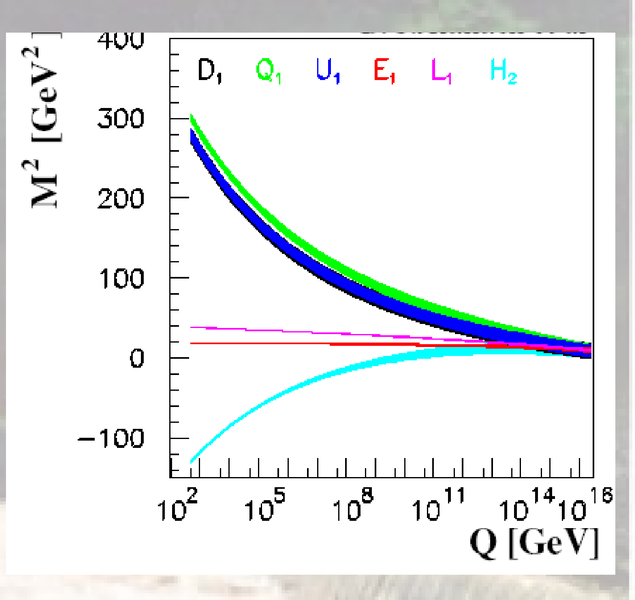




The synergy between the LHC and the ILC during simultaneous running of the two machines has the potential to maximise the physics gain from both facilities. Due to its high collision energy and luminosity, the LHC has a large mass range for the discovery of new heavy particles, and the ILC's clean experimental environment and tunable collision energy allows it to perform detailed studies of directly accessible new particles. The ILC also has exquisite sensitivity to quantum effects of unknown physics - indeed, the fingerprints of very high scale new physics will often only show up in small effects whose measurement requires the greatest possible precision.



The International Linear Collider together with the Large Hadron Collider: Fundamental research towards the Theory of Everything



LHC / LC Study Group World-wide working group:

www.ippp.dur.ac.uk/~georg/lhclc