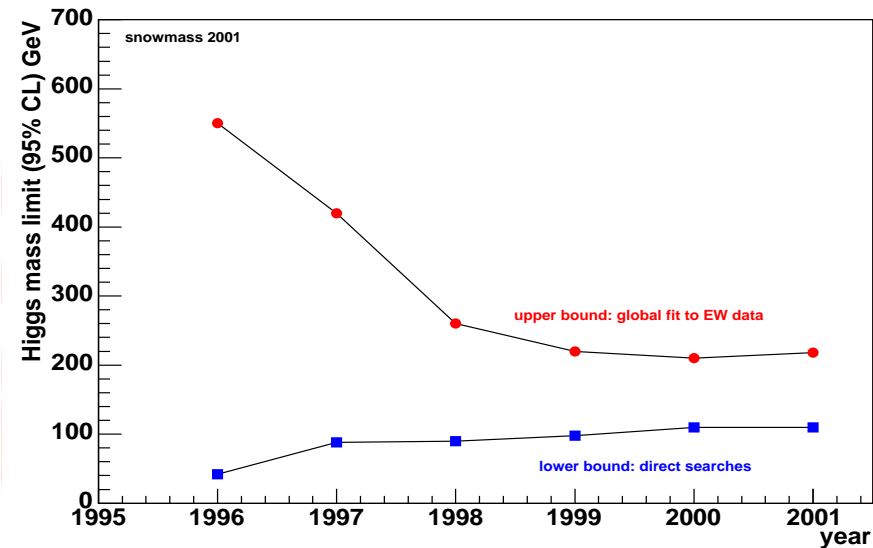
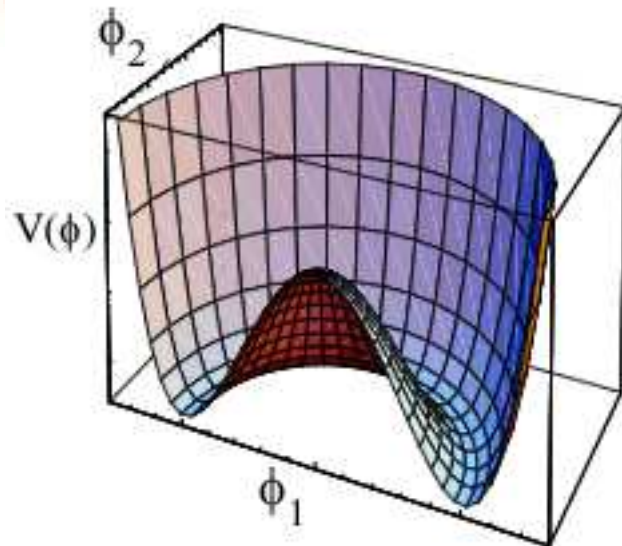




$W_L W_L$ scattering at LHC.

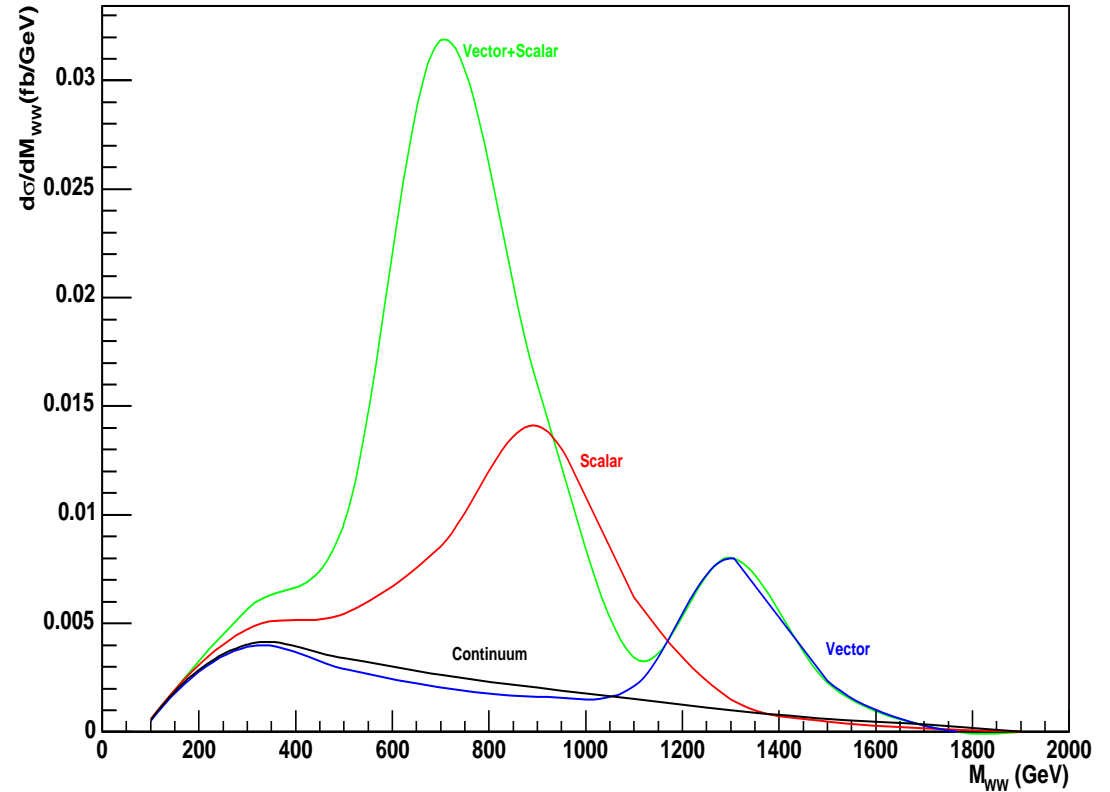
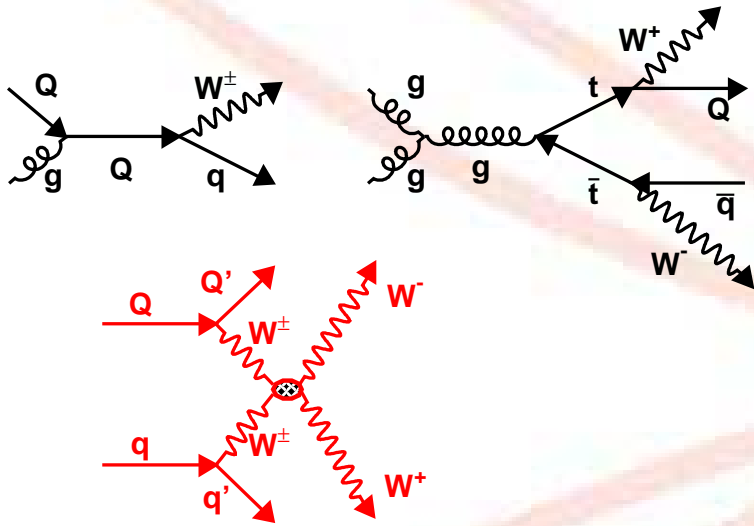
Efstathios (Stathis) Stefanidis
University College London

- Standard Model: A very good model satisfying theorists and experimentalists.
- It explains the **Electroweak Symmetry Breaking-EWSB** by introducing the **Higgs** boson.



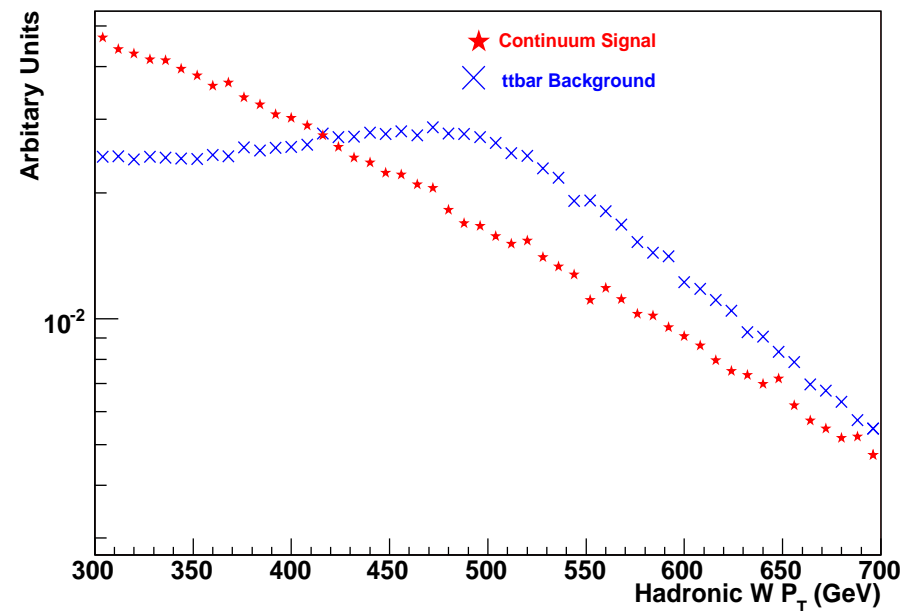
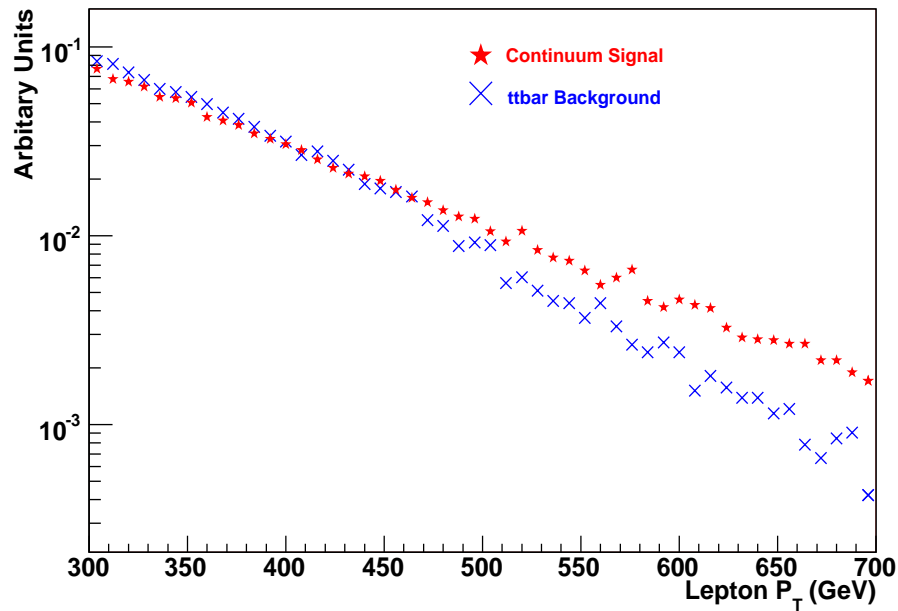
- However, any assumptions and any mass limits are **model dependent**.
- Alternative models to explain EWSB.
- Enhanced production of **longitudinal** vector boson pairs is one of the most characteristic signals of the new physics.

Signal and Background Processes at LHC.



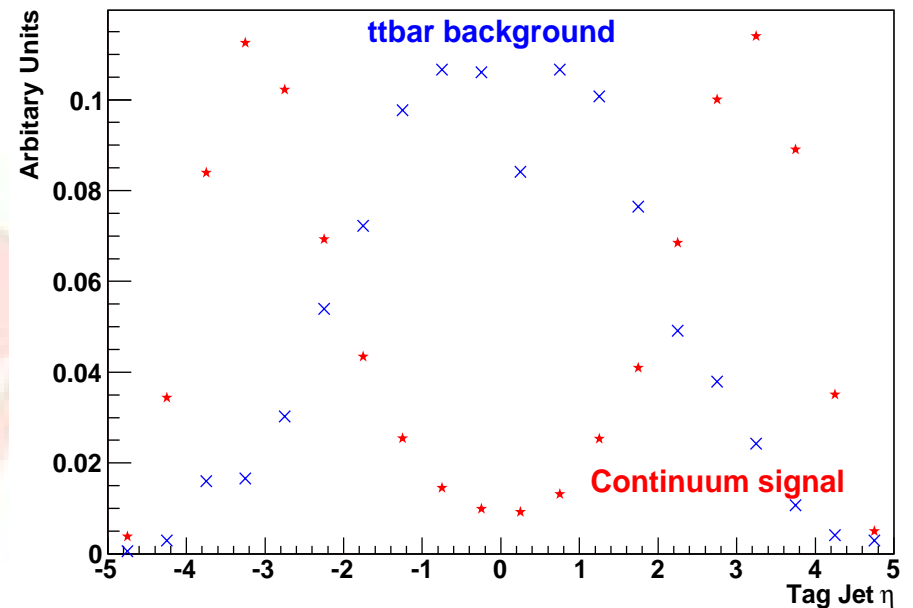
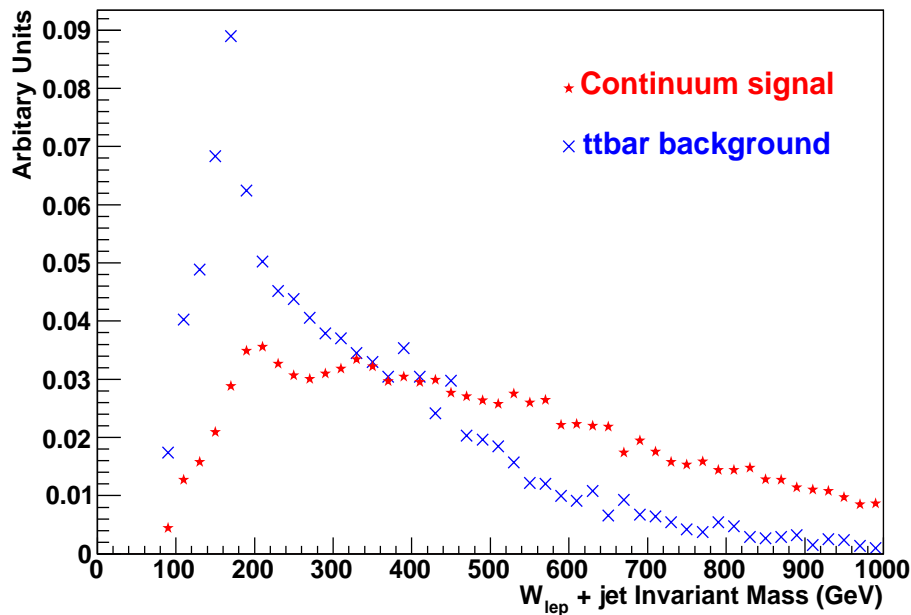
- Signal: $\sigma \times BR = 3.32 fb$.
- $t\bar{t}$ Background: $\sigma \times BR = 4.12 pb$.
- $w+4jets$ Background: $\sigma \times BR = 1.20 pb$.

We identify our final state particles and reconstruct the W's:



Characteristics of the Hadronic environment.

We investigate the features of the hadronic environment:



By **understanding** and **identifying** the features of the processes involved we can apply cuts to increase the **significance**.

- The $W_L W_L$ **scattering** is a probe of new physics at the high energy regimes of LHC.
- Our aim is to measure the **scattering cross section** over an extended range of the WW mass spectrum.

- Use the appropriate data samples of the physics processes involved.
- Apply a more accurate simulation of the Detector.
- Extend the reconstruction to take into account the all the effects (for example **pile-up**).
- Improve the analysis algorithms to achieve a very **good significance** even with the early data.