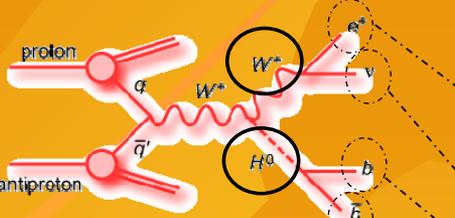
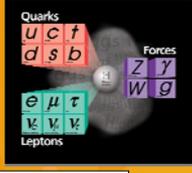
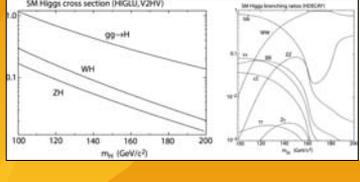


SEARCH FOR THE "ELUSIVE" SM HIGGS BOSON ASSOCIATED WITH A W USING ME+BDT

Bárbara Álvarez, on behalf of the CDF Collaboration

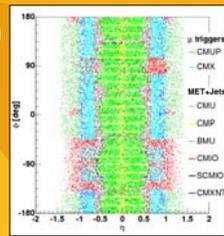
1. Motivation

The last SM particle to be observed



2. Event Selection

- One high p_T lepton (e/μ): $p_T > 20$ GeV
 - Missing $E_T > 20$ GeV
 - Two central energetic jets: $|\eta| < 2.0$, $E_T > 20$ GeV
 - At least one **b-jet**
- 3 b-tagging categories**

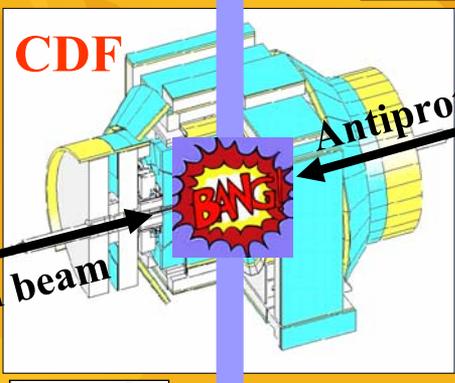


$m_H < 114.4$ GeV/ c^2 excluded by LEP

For Higgs physics the full detector is needed!!

3. Background Estimation

- Overwhelming backgrounds
- Signal much smaller than the uncertainty on the backgrounds



4. ME+BDT Technique

Calculate the probability density of an event resulting from a given process:

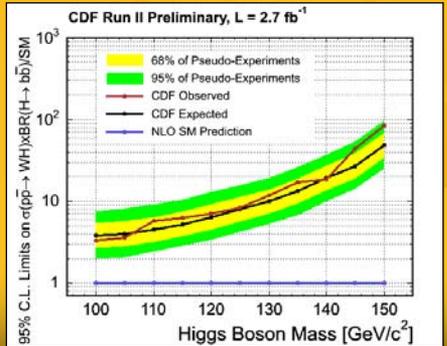
$$P \propto \int d\rho \Sigma |M(p_i)|^2 f(q_1) f(q_2) W_{jet}$$

BDT trained with some kinematic variables and ME information

CHALLENGING ANALYSIS!!

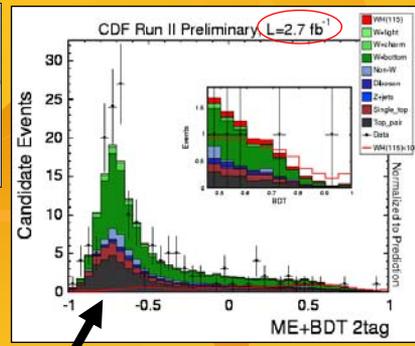
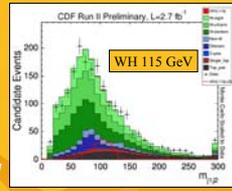
8 expected signal events over 2166.04 ± 298.79 expected background events

5. Results



No signal excess observed

For a Higgs mass of 115 GeV/ c^2 :
Expected (Observed) Limit:
5.24 (6.23) x SM



FINAL DISCRIMINANT