# Single Top Status and Plans

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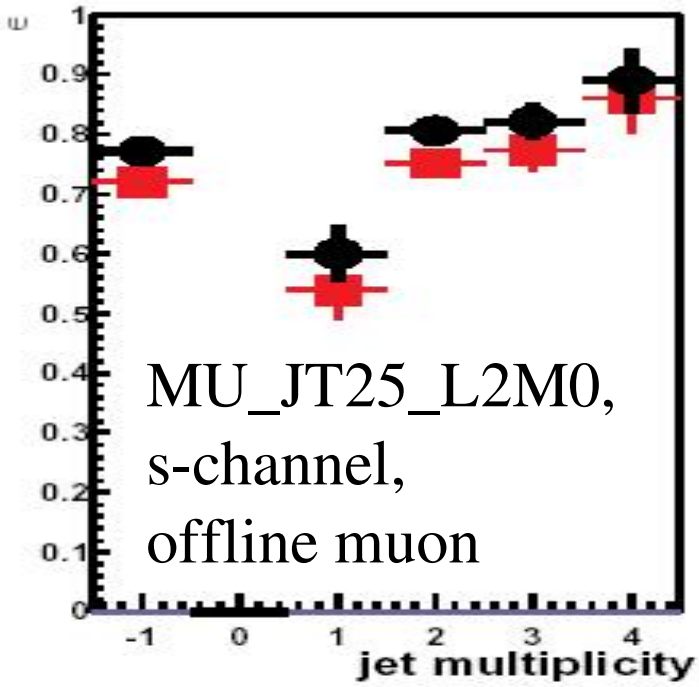
# Introduction

- Status:
- MC samples available
  - PMCS likely not yet ready for Moriond analysis
- small data samples available
  - see skimming report
  - initial studies have focused on understanding QCD background
  - need full samples/certified ID for complete studies
- data studies have started
- Plans:
- Single Top Workshop 12/8 and 12/9
  - only three days left to prepare
  - transition point to final analysis

# Single Top Studies

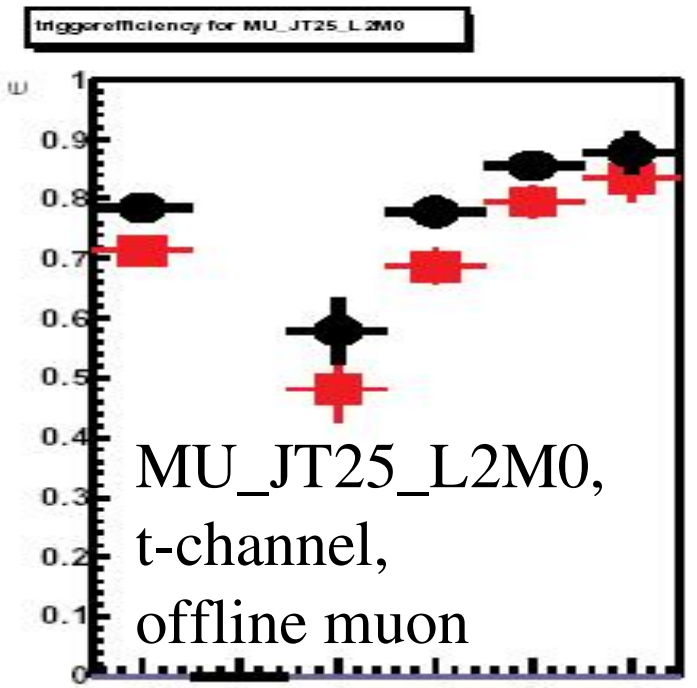
- trigger studies
  - many studies done to prepare for version 13 and to get efficiencies for version 12
  - add rejection
  - improve efficiency
- background studies
  - measurement methods
    - Matrix Method, System 8, Orthogonal Samples
  - study cuts
    - 15GeV vs 20GeV cut on lepton, jet pt

# Muon Channel Trigger Studies

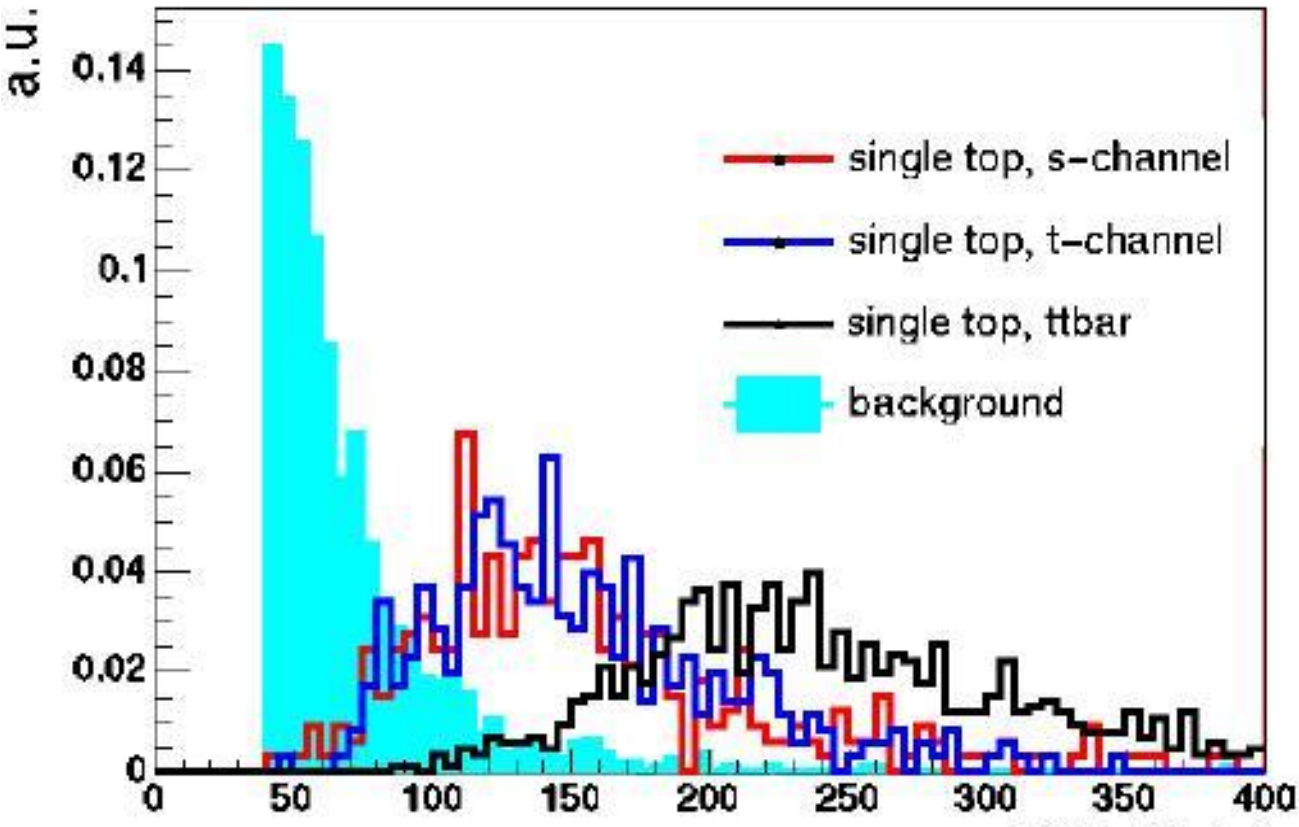



MU_JT25_L2M0,
s-channel,
offline muon

HT = scalar sum of SC5JET_9_PV3 jets Et's
HTV = vector sum
HTA = HT + |HTV|




MU_JT25_L2M0,
t-channel,
offline muon

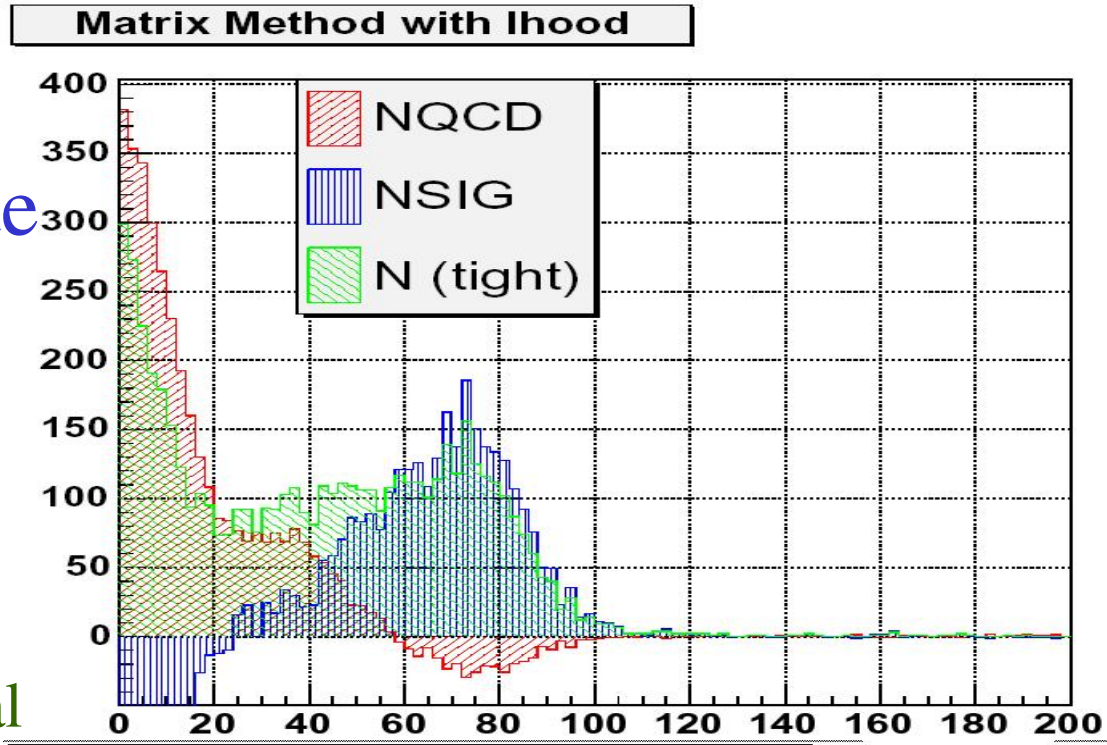


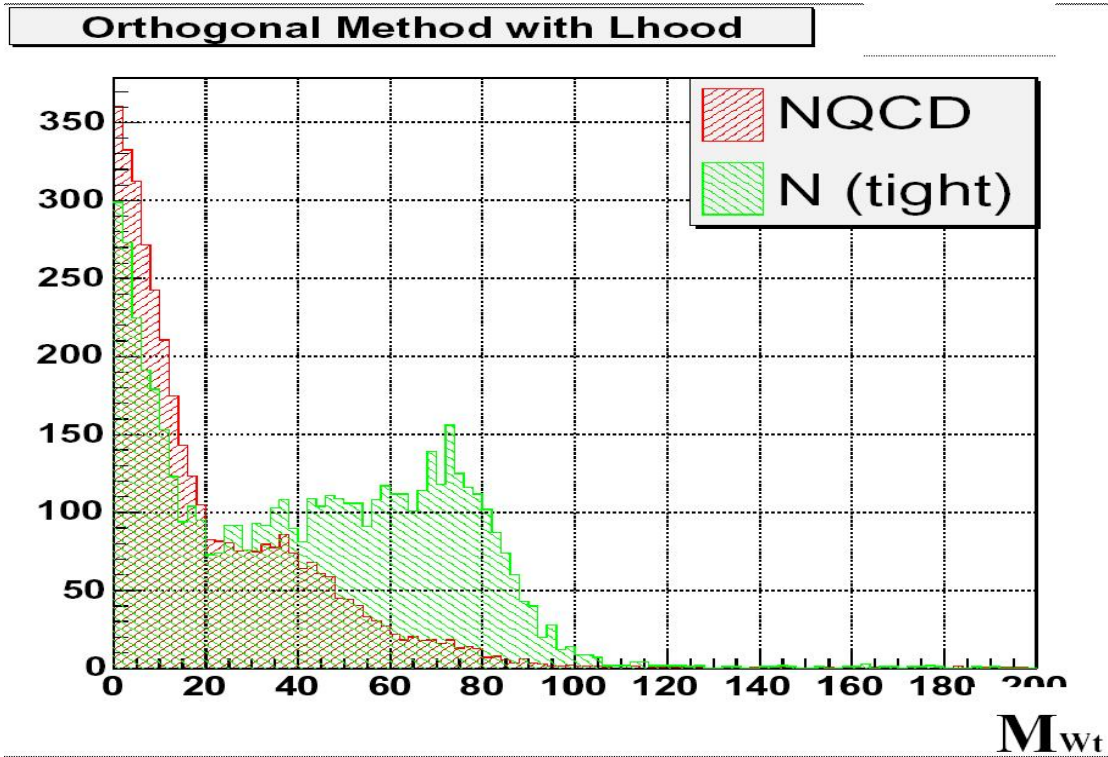



E. Perez, M. Agelou

# Electron Channel studies

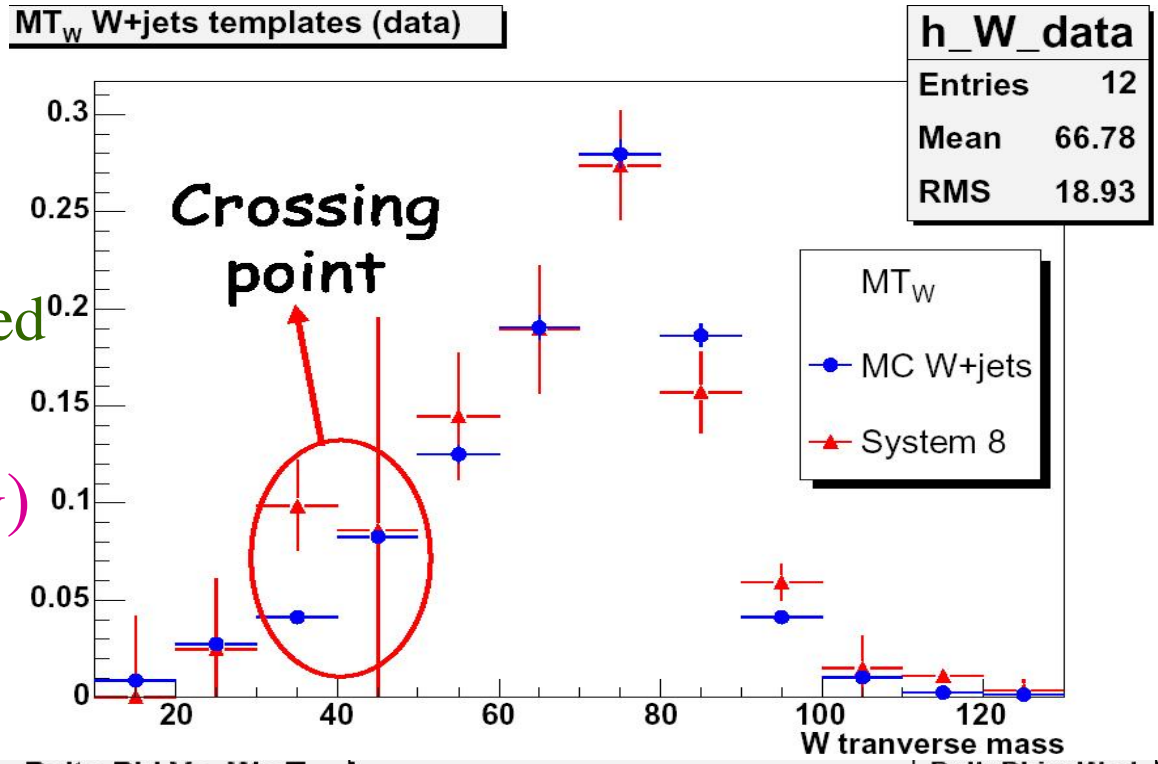
- QCD background estimate
  - based on likelihood
  - Matrix Method
    - evaluate W+jets and QCD content in the same sample
    - requires knowledge of signal efficiency
  - Orthogonal Samples Method
    - estimate QCD from sample that fails likelihood cut

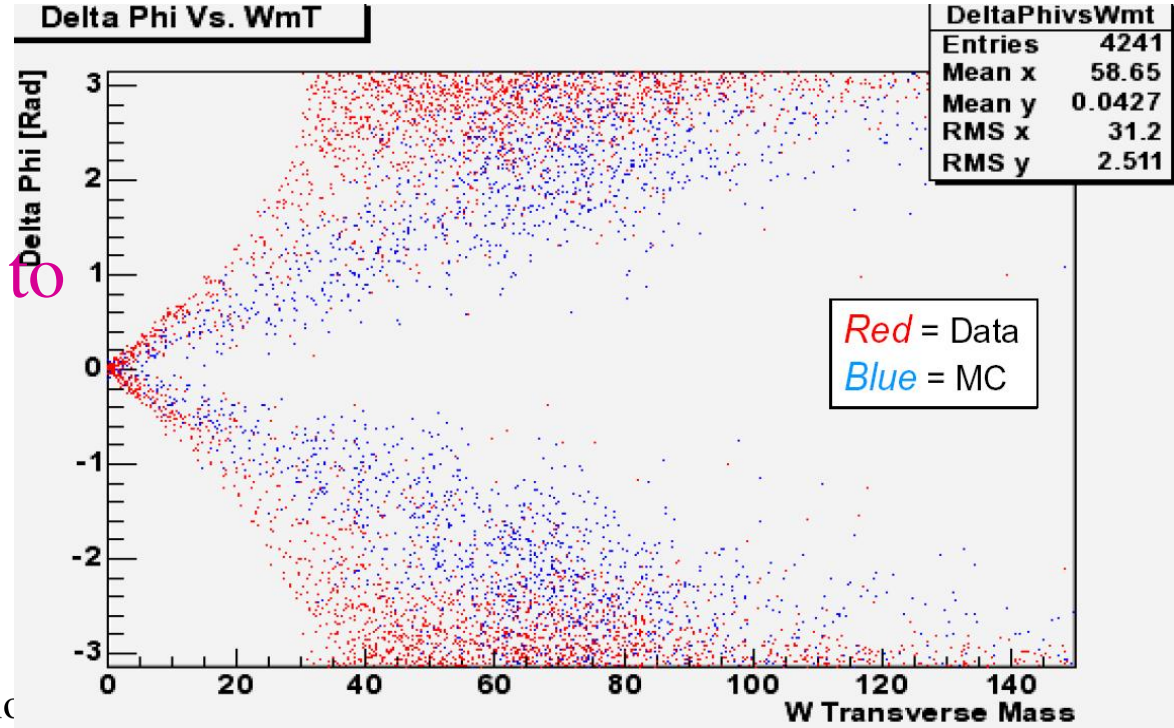


# Muon Channel Studies

- QCD background
  - System 8 (Benoit C)
    - 3 independent cuts, only need signal sample
  - Matrix Method (Thomas G)
- efficiency (Gordon W):
  - raising muon pt cut from 15GeV to 20GeV looses 10% to 15%
  - relaxing jet eta and pt cuts to letal<3.5 and pt>15GeV increases efficiency by 10% to 15%



# Single Top Workshop

- Focus is on understanding data and backgrounds
  - QCD background estimates
  - agree on pre-selection cuts
    - both electron and muon channel
- Intend to have lots of time for discussion
- Also get updates from experts
  - IDs, b-tagging, ttbar analysis, MC, trigger, etc.
- start thinking about final analysis steps
- get to know your Single Top colleagues

# Preliminary Workshop Agenda

- Monday, 12/8 in the Hornet's nest
  - General Overview
    - MC, trigger
  - Object ID
    - Details about IDs, fake rates, efficiencies
  - Electron channel
    - background estimation methods
    - many plots
  - Muon Channel
    - background estimation methods
    - many plots

# Preliminary Workshop Agenda

- Tuesday, 12/9, in the SiDET conference room
  - Electron channel discussion session
    - compare plots, cuts
    - agree on cuts
  - Muon channel discussion session
    - compare plots, cuts
    - agree on cuts
  - Next Steps
    - final analysis methods, variables
  - Summary
    - electron channel summary
    - muon channel summary

# Future Plans

- Study b-tagging
  - background estimates in tagged samples
- Study final event selection methods
  - focus on simple final analysis method(s) first
- need finalized IDs, top_analyze, etc.
- start writing note