

# TOP PROGRAMS AT UDINE & ICTP

Kerim Suruliz (INFN Gruppo Collegato di Udine & ICTP, Trieste)

Milano, Italy, May 27, 2008



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- Kerim Suruliz (postdoc, INFN & ICTP, Trieste)
- Working full time on analysis.





- Commissioning pair production cross-section analysis.

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- Contribution to the CSC T6 note on x-sec measurement.



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- Counting method based on simple formula

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- $\mathcal{L}$  is the integrated luminosity and  $\epsilon$  total efficiency - also from MC.



# CUTS USED

- Standard selection used in top physics note +  $W$  mass window cut.  
No b-tagging.

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- Can also require the top candidate to be in a top mass window.
- Explored a range of techniques for improving  $S/B$  and purity,  $|\eta| < 1$  cut on top candidate jets,  $\cos \theta^*$  and  $M_{eff}$  variables...

# RESULTS - ELECTRONS

Electron analysis	
Sample	default
$\bar{t}t$	2555
had $\bar{t}t$	11
$W$ +jets	761
single t	183
$Z$ +jets	115
$W \bar{b}b$	44
$W \bar{c}c$	19
$WW$	7
$WZ$	4
$ZZ$	0.5
Sig	2555
Bkgd	1144
S/B	2.2

# RESULTS - ELECTRONS

Electron analysis		
Sample	default	$W$ const.
$\bar{t}t$	2555	1262
had $t\bar{t}$	11	4
$W$ +jets	761	241
single $t$	183	67
$Z$ +jets	115	35
$W \bar{b}b$	44	15
$W \bar{c}c$	19	6
$WW$	7	4
$WZ$	4	1
$ZZ$	0.5	0.2
Sig	2555	1262
Bkgd	1144	374
S/B	2.2	3.4

# RESULTS - ELECTRONS

Electron analysis			
Sample	default	$W$ const.	$m_t$ win
$\bar{t}t$	2555	1262	561
had $t\bar{t}$	11	4	0.0
$W$ +jets	761	241	60
single t	183	67	23
$Z$ +jets	115	35	8
$W \bar{b}b$	44	15	3
$W \bar{c}c$	19	6	1
$WW$	7	4	0.4
$WZ$	4	1	0.4
$ZZ$	0.5	0.2	0.1
Sig	2555	1262	561
Bkgd	1144	374	96
S/B	2.2	3.4	5.8

# RESULTS - ELECTRONS

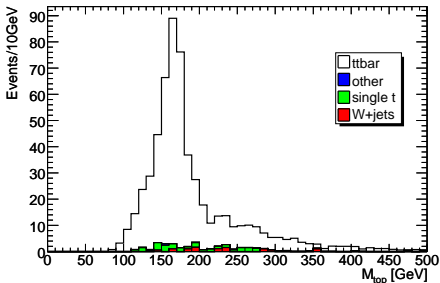
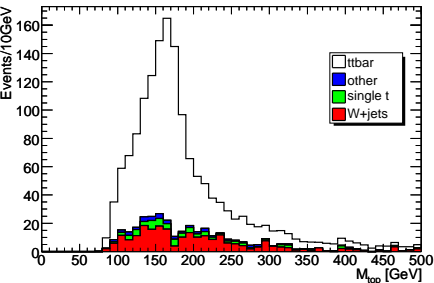
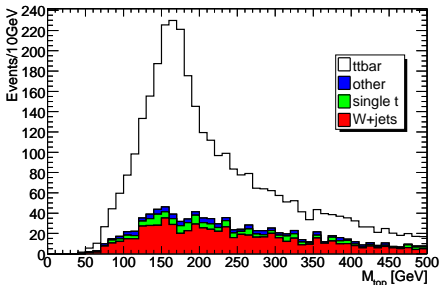
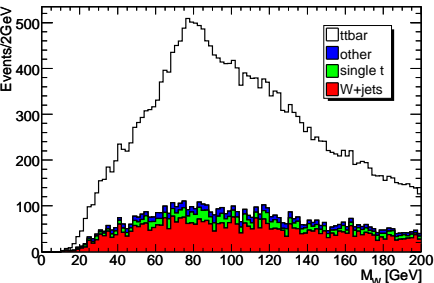
Electron analysis				
Sample	default	$W$ const.	$m_t$ win	$W$ const. + 1 $b$ -tag
$\bar{t}t$	2555	1262	561	329
had $t\bar{t}$	11	4	0.0	0.6
$W$ +jets	761	241	60	7
single $t$	183	67	23	18
$Z$ +jets	115	35	8	2
$W \bar{b}b$	44	15	3	5
$W \bar{c}c$	19	6	1	0.4
$WW$	7	4	0.4	0.0
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# RESULTS - ELECTRONS

Electron analysis					
Sample	default	$W$ const.	$m_t$ win	$W$ const. + 1 $b$ -tag	$W$ const. + 2 $b$ -tag
$\bar{t}t$	2555	1262	561	329	208
had $t\bar{t}$	11	4	0.0	0.6	0.0
$W$ +jets	761	241	60	7	1
single $t$	183	67	23	18	7
$Z$ +jets	115	35	8	2	0.4
$W \bar{b}b$	44	15	3	5	0.7
$W \bar{c}c$	19	6	1	0.4	0.0
$WW$	7	4	0.4	0.0	0.0
$WZ$	4	1	0.4	0.0	0.0
$ZZ$	0.5	0.2	0.1	0.0	0.0
Sig	2555	1262	561	329	208
Bkgd	1144	374	96	33	10
S/B	2.2	3.4	5.8	9.8	21.6

# PLOTS



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  - Invited seminar at Durham, UK by K. Suruliz (top physics at ATLAS/CMS)



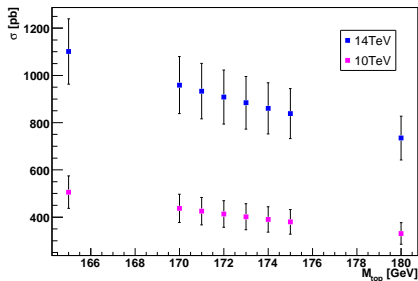
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  - Invited seminar at Durham, UK by K. Suruliz (top physics at ATLAS/CMS)
  - SIF in Genova, Sep 2008 - two abstracts (commissioning analysis - M. Pinamonti, top x-sec and properties - Giordani)

# PRESENT ACTIVITY

- Currently studying AtI Fast II and making comparisons between FullSim and AtI Fast II in release 13 (also with v12 FullSim).

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- Also  $t\bar{t}$  at 10TeV.



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- Cross-checking data formats: run directly on AOD, TopView ntuples, our own n-tuples.

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- Study kinematical distributions for
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- Quantities to study in detail:
  - 1  $P_T$  of first four jets.
  - 2  $P_T$  of lepton.
  - 3 Missing  $P_T$ .
  - 4 Number of jets.
  - 5 ...

# FUTURE PLANS: PHASE 3



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# CONCLUSION

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**Thank you for your attention**