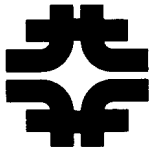


CDF Run 2b

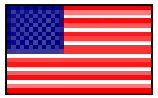
Nigel Lockyer
For the CDF Collaboration

Temple/Technical Review

August 12, 2002

CDF Collaboration

North America



3 Natl. Labs
28 Universities

1 Universities

Europe

1 Research Lab
6 Universities

1 University

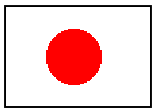
4 Universities

2 Research Labs

1 University

1 University

Asia



5 Universities
1 Research Lab

1 University

3 Universities

Totals

12 countries

58 institutions

581 physicists

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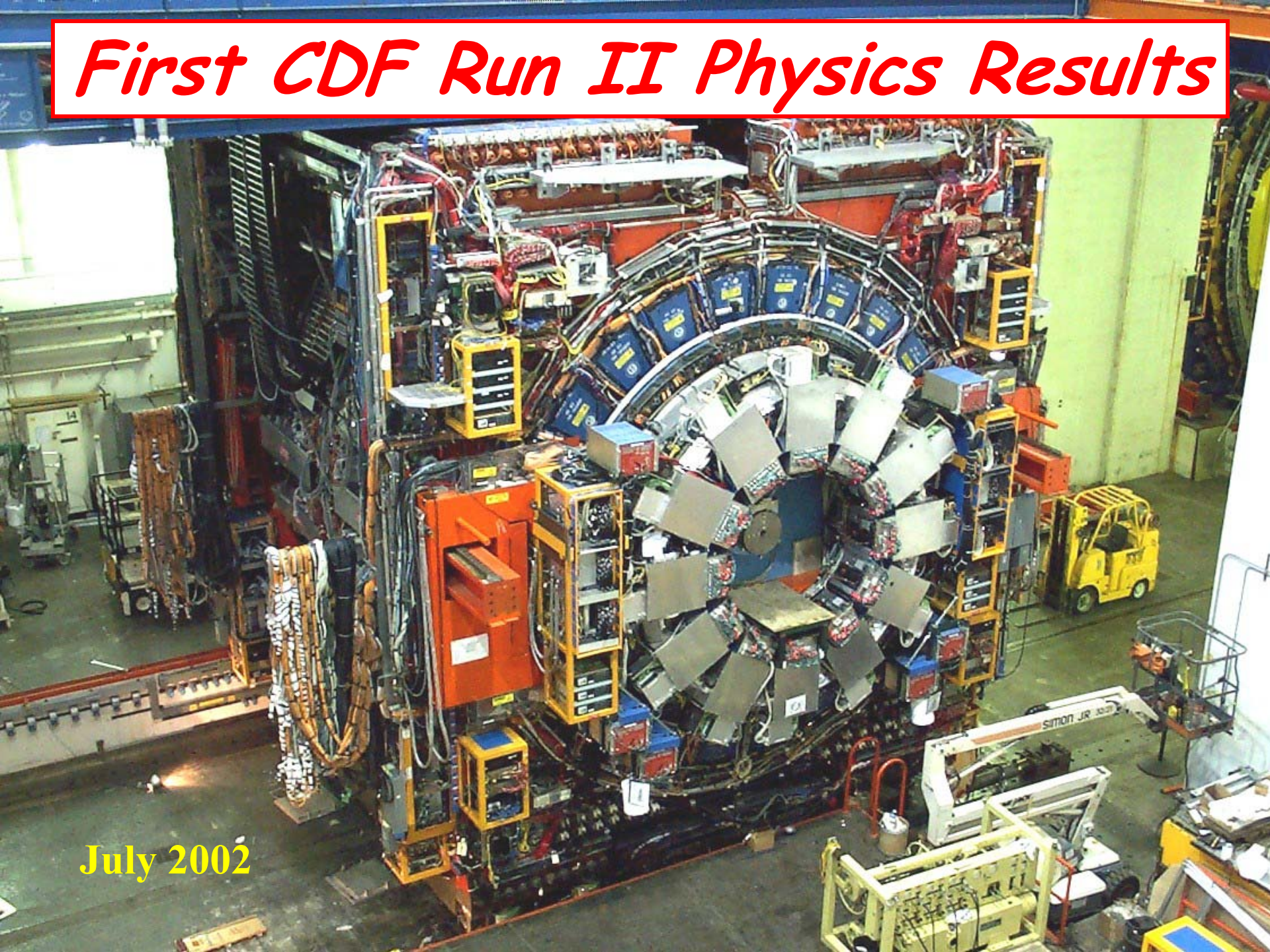
First CDF Run II Physics Results



Outline

- Timeline
- Physics Opportunities
- CDF Performance
- The Process
- Collaboration Support

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Why Run 2b

- Tevatron is the Energy Frontier
- LHC is the Future 2007+commissioning
- CDF @2005–well understood Instrument
- Unprecedented Detector Sensitivity
- CDF has unique and powerful tracking ability
- Tremendous opportunity for discovery

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Physics Opportunities in 2b

- Explore the high energy frontier
- Experiments will guide theory
- No clear paradigm for new physics
- SUSY, extra dimensions, leptoqaurks.....
- Drives detector Upgrades

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Opportunities in High Pt Physics for Run II

Anomalies in Run I data

1. Cross section at High Et Jet
2. Top Dilepton
3. ee $\gamma\gamma$ Missing E_T
4. W+2 jets

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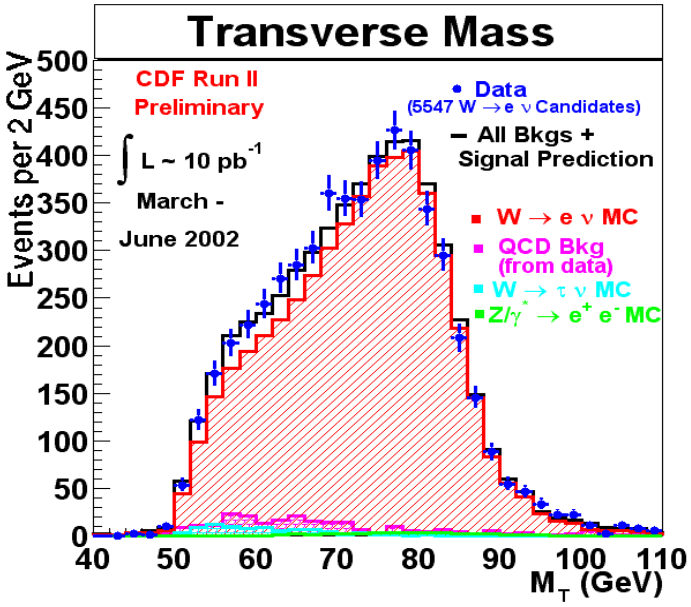
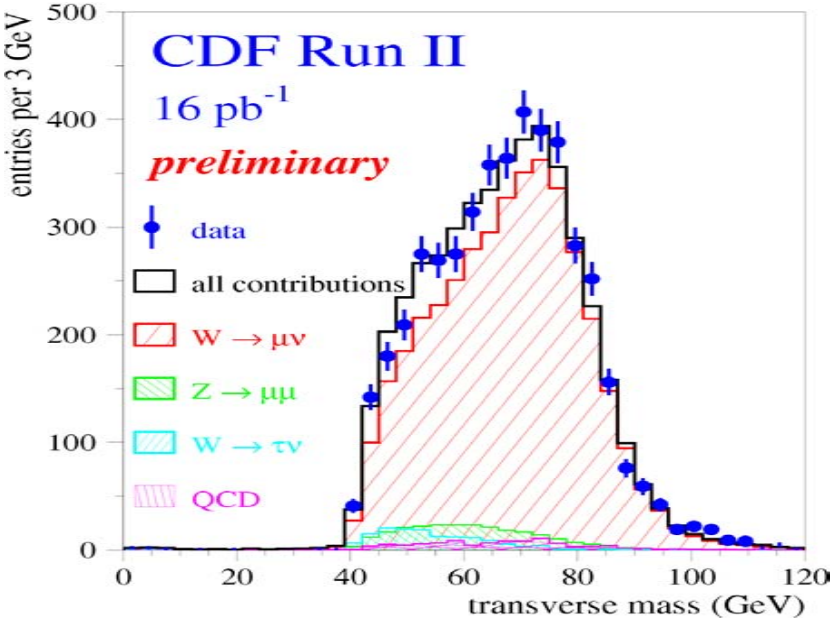
Measurements of σB(W→eν, μν)





M_T

5547 candidates

σ_W*BR(W→eν) (nb) =

$2.60 \pm 0.07_{stat} \pm 0.11_{syst} \pm 0.26_{lum}$

4561 candidates

σ•B(W→μν) =

$2.70 \pm .04_{stat} \pm .19_{syst} \pm .27_{lum}$

Run 1 scaled to 1.96 TeV: $2.72 \pm 0.02_{stat} \pm 0.09_{syst} \pm 0.10_{lum}$

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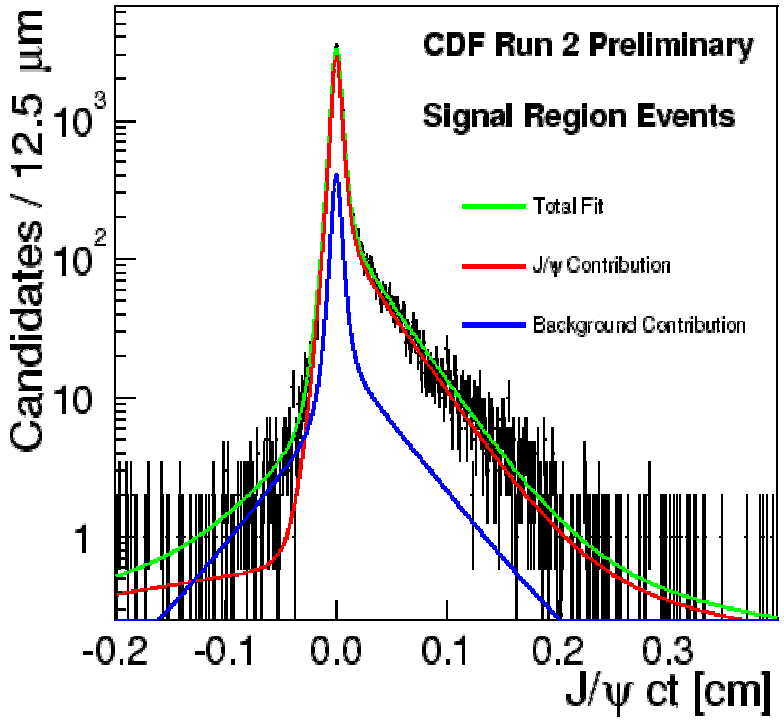
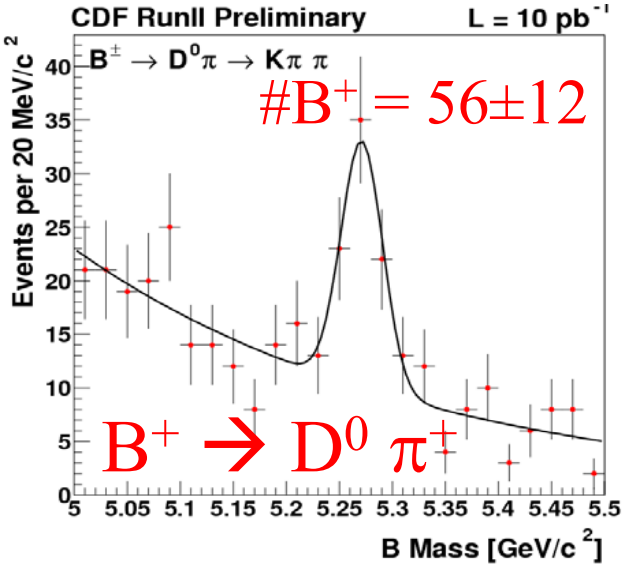
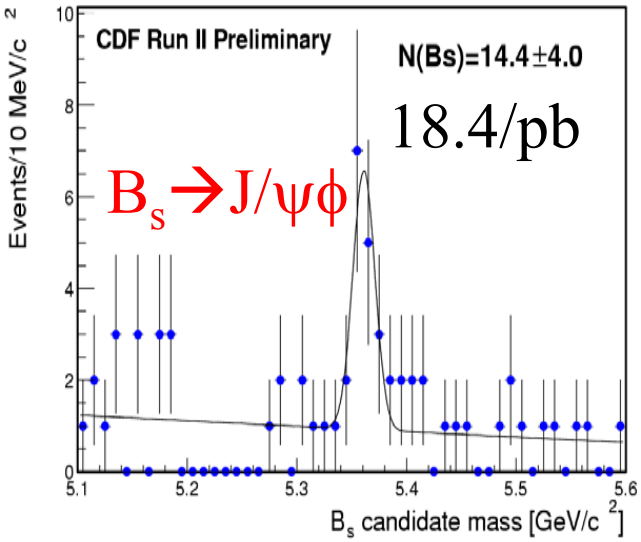
Toward B_s mixing using $B_s \rightarrow D_s\pi$







- Exclusive $B^+ \rightarrow J/\psi K^+$ lifetime

  $c\tau = 446 \pm 43_{stat.} \pm 13_{syst.}$ μm (PDG: 502±5 μm)

- Inclusive B lifetime with J/ψ's

  $c\tau = 458 \pm 10_{stat.} \pm 11_{syst.}$ μm (PDG: 469±4 μm)

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Trigger/DAQ Upgrade

- Formed Task Force after last PAC
- Charge-answer PAC questions
- Document goes well beyond charge
- Huge effort underway for Run2a
- Conclude: targeted upgrades imperative for high mass physics program

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Collaboration Support

- Preparing run2b MOUs
- Very Strong non-US support for 2b
- Since LHC future—new interest from Europe
- 60% US institutions committed to upgrade
- All institutions committed to run2b

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Summary

- High confidence in CDF detector
- Tremendous discovery potential in run2b
- Upgrades focused in critical areas only
- Collaboration will make run2b a success

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