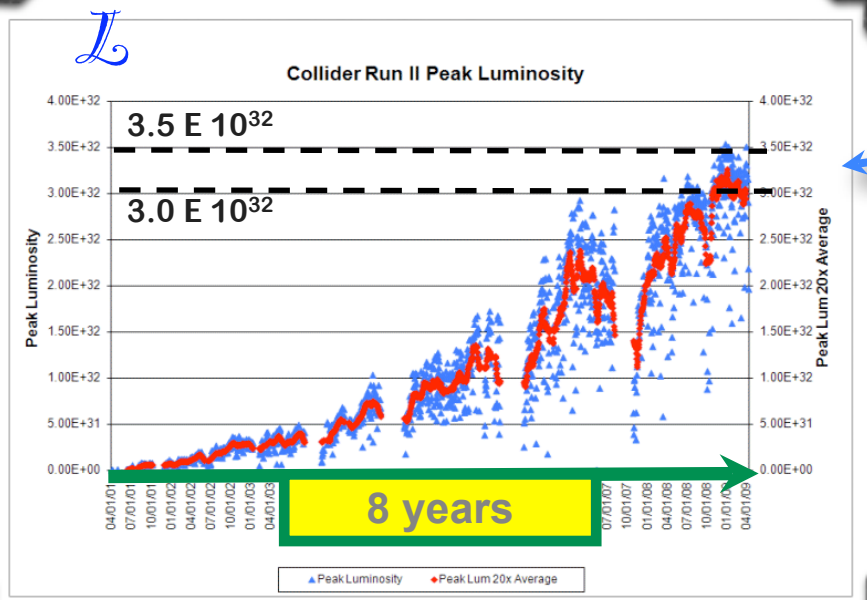
# Summary/Discussion

- Tevatron status and plans
- Tevatron program in the out-years
  - Also in light of the LHC
- Discussion

UK HEP Forum
"From the Tevatron to the LHC"
7-8 May 2009


Terry Wyatt - University of Manchester
Jacobo Konigsberg - University of Florida

# Run 2 Luminosity Progress




**Record peak inst. luminosity**

$3.6\ E\ 10^{32}\ cm^{-2}\ s^{-1}$

**Record luminosity/week**

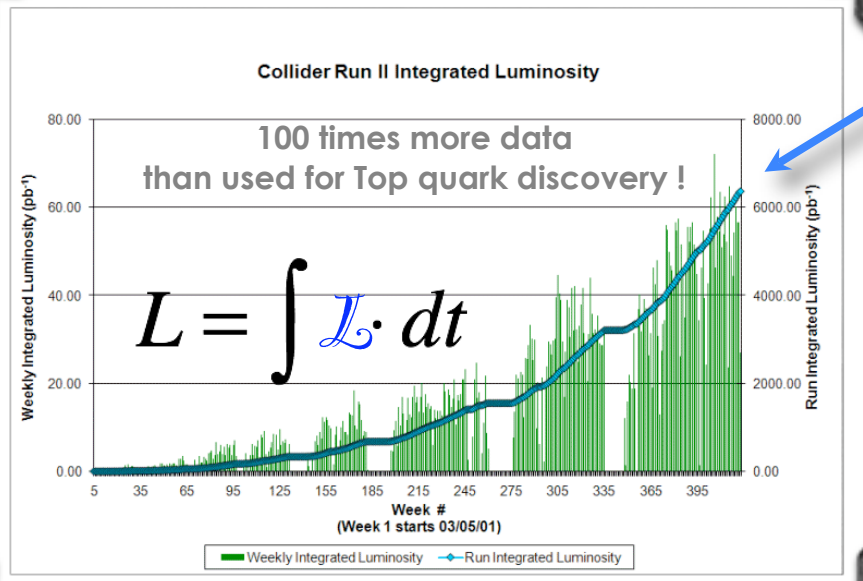
$73\ pb^{-1}$

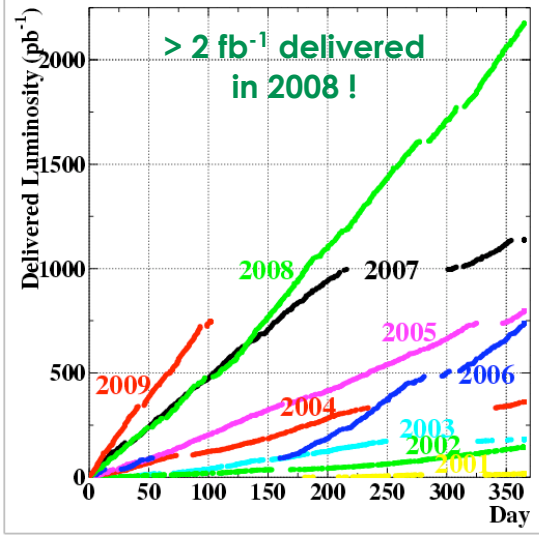
**Record luminosity/month**

$250\ pb^{-1}$

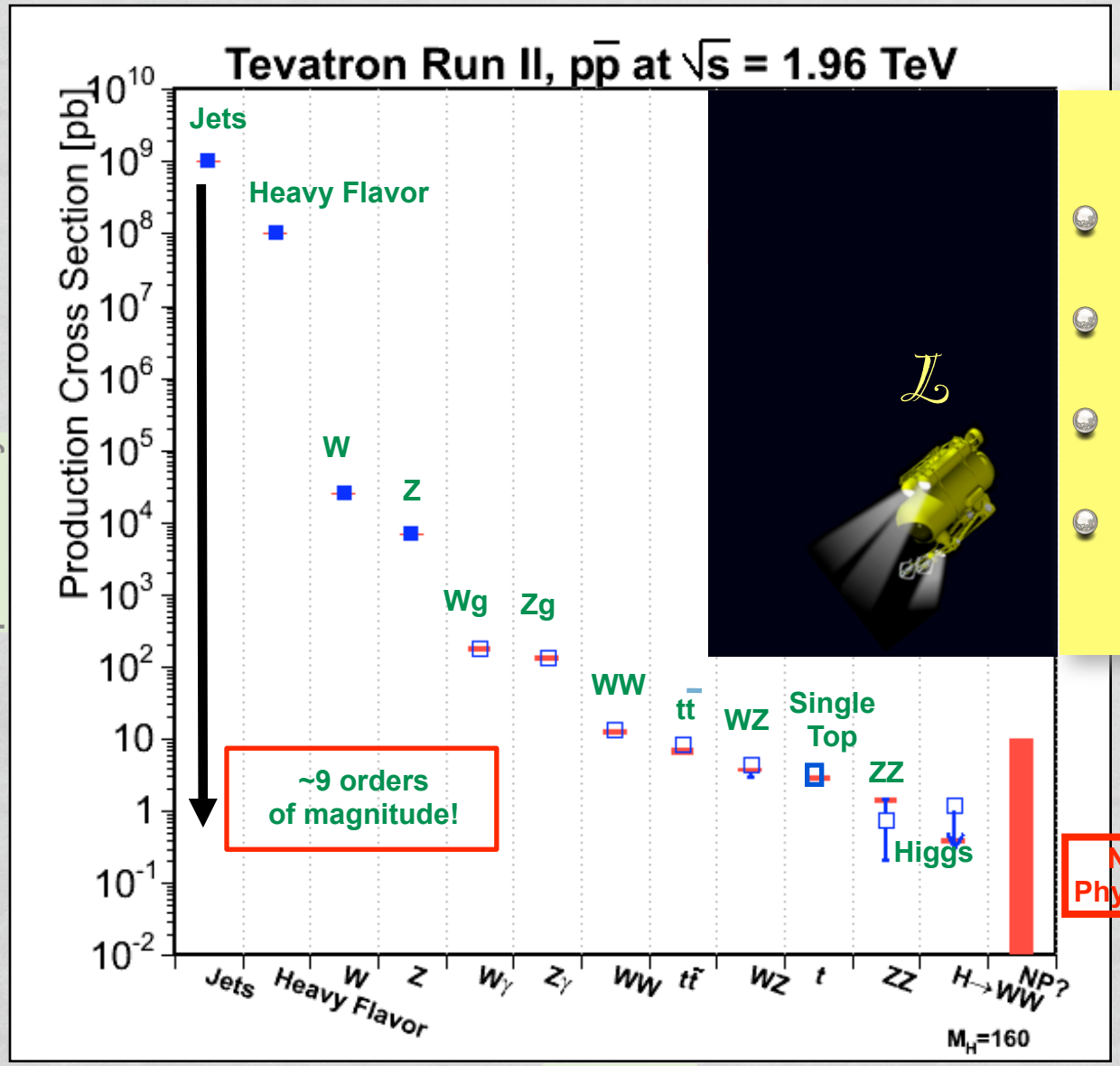
**Total Luminosity delivered**

$6.5\ fb^{-1}$



# The Tevatron: A Luminosity Story




- Discoveries
- Open new research
- Increase precision
- Test for New Physics

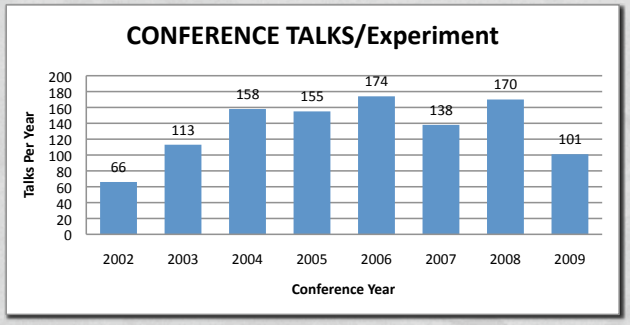
# The Tevatron Physics Program

- Precision, new research and discoveries
  - Mixing, CKM constraints, and CP-Violation
  - Heavy Flavor Spectroscopy
  - New Heavy Baryon states
  - Tests of QCD and HF production
  - Top-quark and W-boson Masses
  - Top quark properties/production
  - Di-Boson production and SM Gauge Couplings
  - New exclusive/diffractive processes
- Unique window into the unknown
  - Searches for Supersymmetry, Extra Dimensions, other Exotica
  - Still at the Energy Frontier
    - Probing the Terascale as luminosity increases
- The Standard Model Higgs is now within reach !

# Physics Production

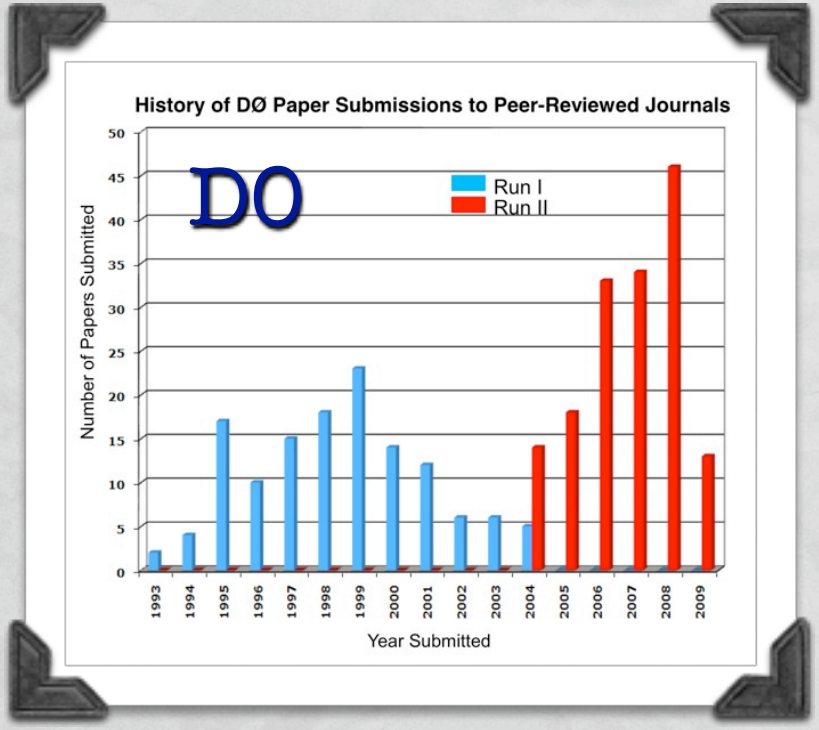
- Stable tools and an excellent understanding of the detectors and the data

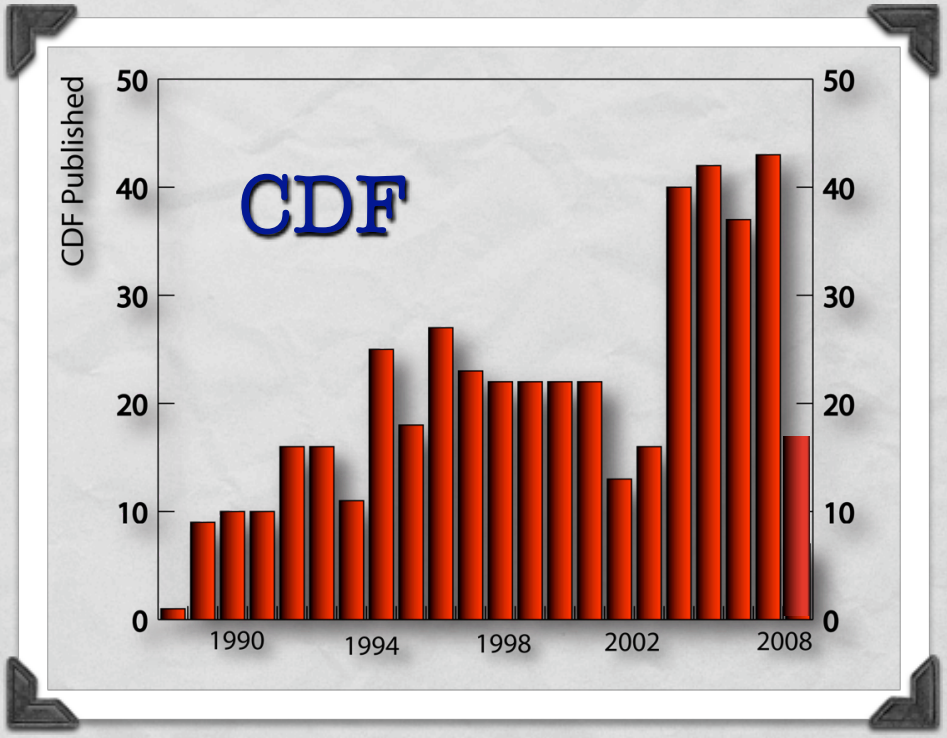
- Productivity is higher than ever
  - Near 100 new results between Summer08 and Winter09 [CDF+D0]
  - Tevatron results are dominant in HEP conferences




- Still in some areas we are only scratching the surface
  - Potential for further precision, reach and discovery
  - We must keep studying the data from all angles

# Tevatron Impact



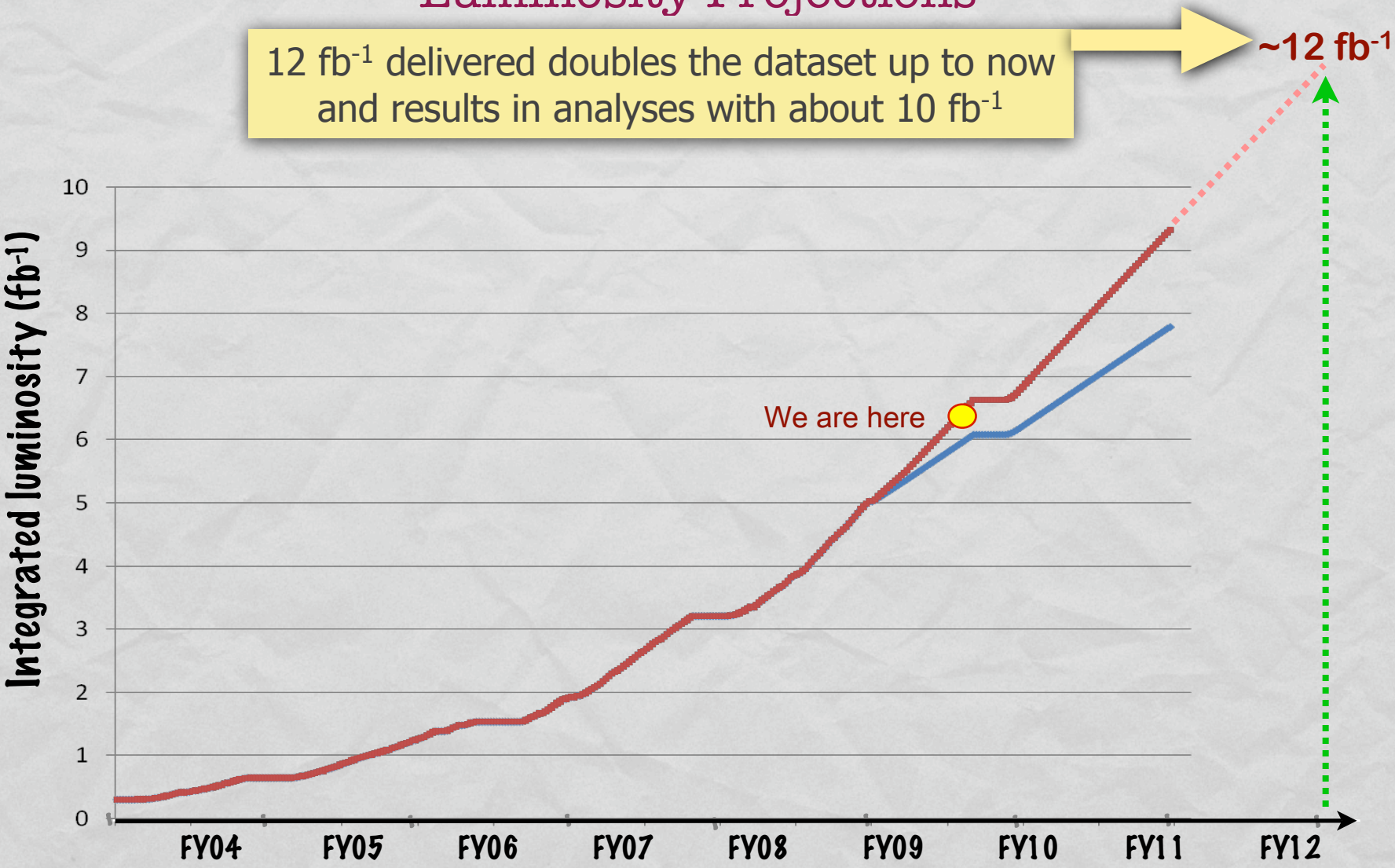




- Nearly 100 journal publications last year alone
- About 60 Ph.D.'s / year over the last few years
- About 3500 physicists have participated on the CDF and DO experiments
- Great impact in terms of physics and people for the LHC

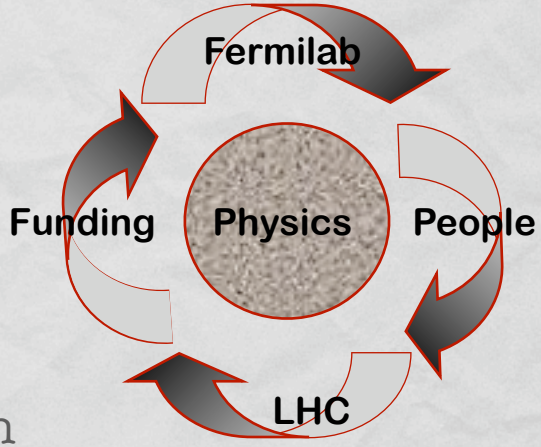
# So for how long?

## Luminosity Projections

12 $fb^{-1}$ delivered doubles the dataset up to now and results in analyses with about 10 $fb^{-1}$



# Considerations for extended running




- Physics Motivation
  - Doubling the dataset in about 2 years
    - Higgs possibilities
    - Uniqueness of some physics at the Tevatron
    - Discovery potential remains (1-4 $fb^{-1}$ analyzed so far)
    - Do not shut down an excellent program until truly obsolete
      - Recognition that a realistic LHC path to [relevant] physics is not necessarily immediate
- Fermilab, Funding, Collaborations
  - All parties very interested in FY11 run
  - The DOE is considering this very seriously - extra funding needs and sources being assessed
  - Expect a decision at the end of the year at the latest

# Physics Goals

- Operational goals
  - Summer'09: analyze ~5 $fb^{-1}$
    - This will be a major milestone!
  - Analyze ~2 $fb^{-1}$ more each year for key results
    - Challenging [we have been doing ~1/2 of that]
- Program goals
  - Extract as much juice from the data as possible
    - Precision, new processes, New Physics, Higgs
    - Establish legacy measurements
    - Not miss anything
  - Revisit program for the out-years
    - What should go on with increasing luminosity
    - What helps the LHC
    - What should wrap up
    - Facilitate long-term access to tools and data

★ Challenge: make sure teams are in place for key analyses

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