Higgs Working Group Report II
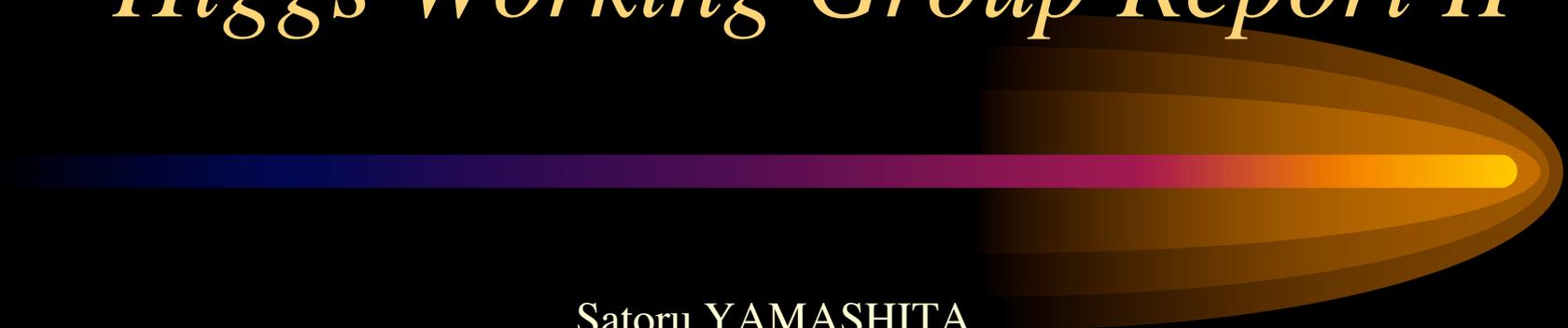
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What to do in the simulation study

1. Generator Level (BASES+SPRING+PYTHIA)

2. Detector Level (+ smearing, + JSF Qcuick sim, +Full Sim)

What do we have NOW?

1. Tools for Generator (GRACE+Pythia+Beamstrahlung+ISR)
2. Simdst (Quick simulator)
3. Root Files
4. OLD analyses scheme

Initial state

Beamstrahlung
ISR photon

03.10.03
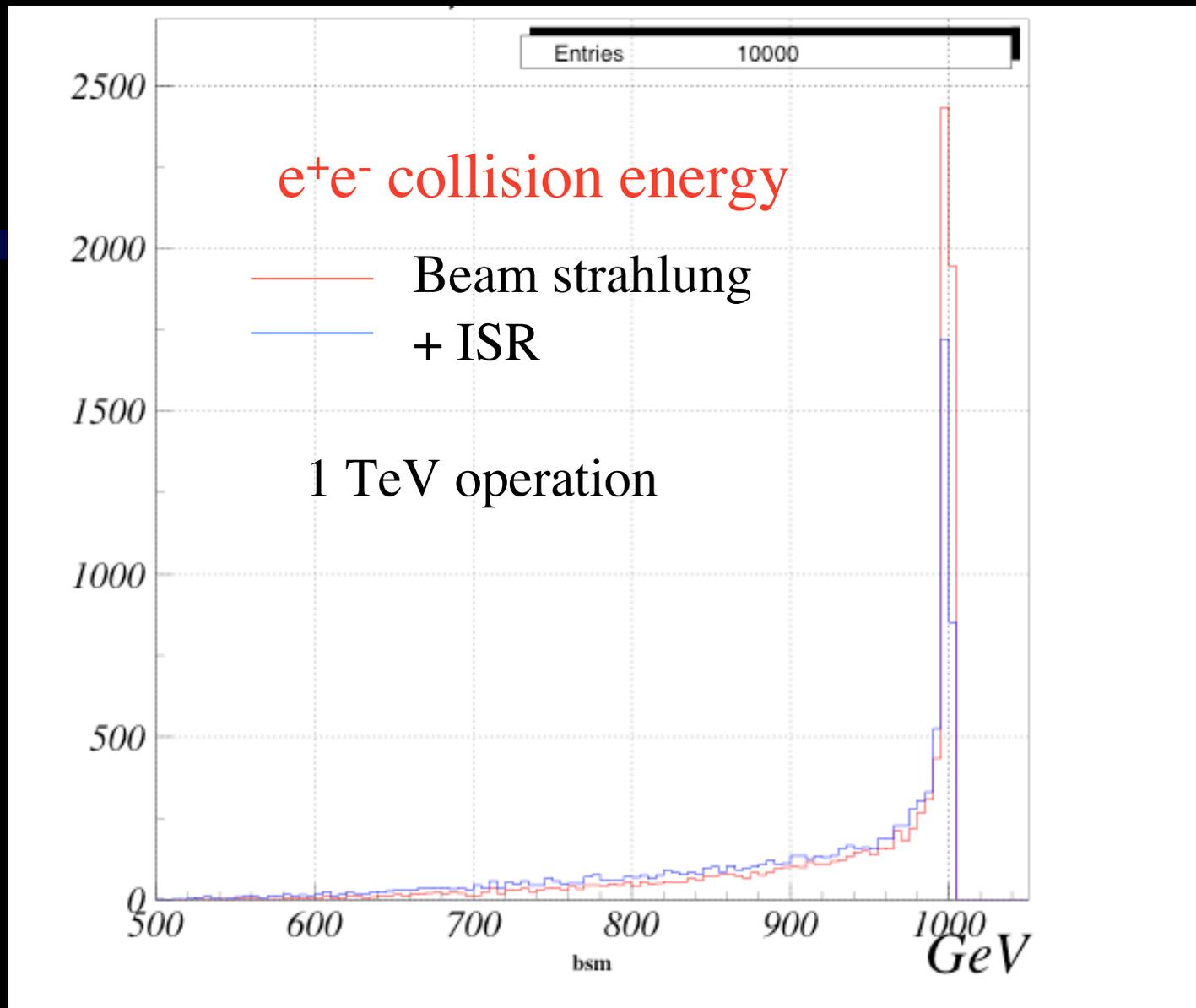
t t h Process Generator Level Example

Top --> b + W   W --> ff   by GRACE
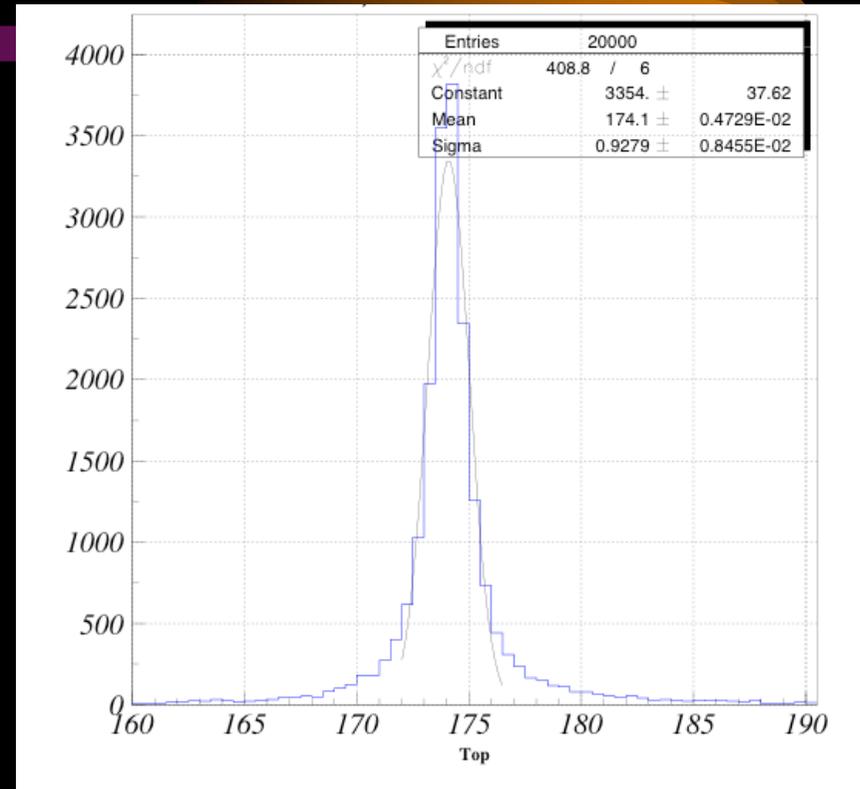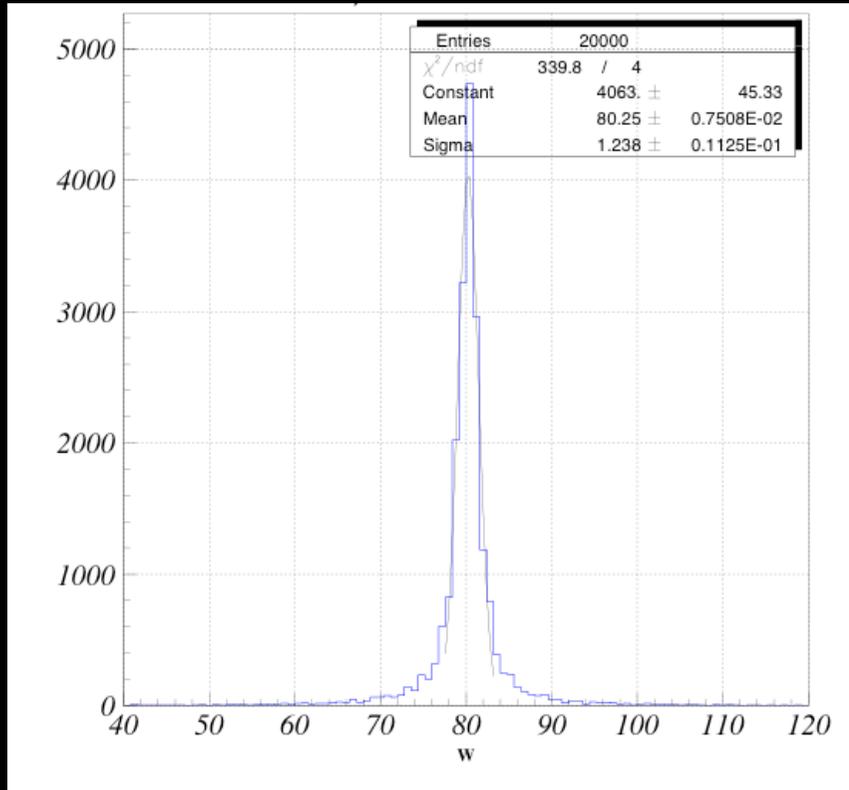
Channels to be analized

1. X + hh (multi-Higgs)   Highest priority   -- Difficult analysis

By ACFA LC :   First results (only for h-->bb)
LCWS   :   updated results

2. SUSY Higgs

AH, H^+H^- should be done   -- Simple

By ACFA LC : A,H --> bb, tt may be done
LCWS   : update + more decay channels

3. Zh, $\nu\nu$h   UPDATE   should be done

By ACFA LC : better b/c separation?
better tau tagging
LCWS   : Full UPDATE must be done
an example of Full simulation?

Analyses Platform

System: jlclogin.kek.jp
archive: /proj/higgs/data/…. (bases,spring,pythia,simdst,root)
          /proj/higgs/anal/…. (analyses soft, TO BE CREATED)

● exist ◎ to come soon ○ to come later (Oct 2003)

1. <u>PYTHIA</u> Level platform   (Event check, basic property)
   ● binary dump
   ○ ntuple
2. <u>Simple Smearing</u> (for making Analyses Strategy and tools)
   ◎ ntuple
3. <u>Quick Simulator</u> output
   ● simdst binary dump
   ○ simdst ntuple
   ● Root file

Schedule of Higgs simulation study

2003 spring+summer

    ⬤Discussion on *basic strategy*

    ⬤Generator arrangement (GRACE+PYTHIA)

2003 Sep ⬤Generator *bug fix*

    Oct ◯Establish **Analyses Platform**

    ◯Generator level study

    ◯**smearing** study I

    Nov ◯smearing study II

    ◯JSF **Quick-sim (simdst)** study

    Dec ◯**ACFA LC WG meeting (India)**

2004 Jan-Mar

    ◯ Analyses Upgrade

    Apr ◯**LCWS in Paris**

Key analyses technique will be

1. Jet finding / jet clustering
2. Jet energy calculation
3. b, c, top, tau tagging
4. W, Z tagging
5. Kinematic constraint fit

All techniques must be UPDATED

WG meeting dedicated for simulation analyses will be held when the platforms are established (Oct 2003)

S.Yamashita LC Phys WG
meeting @ KEK 3-Oct-2003