Intermediate Mass Higgs
$160 < M_H < 350$

Paul Derwent
12 Jan 00

- Higgs ->WW and ZZ dominate
- Literature Search: Intermediate 110 -140

  ⇒ WW* and b bbar dominate
- Few Papers:
  - » E. Boos, *et al.*, hep-ph/9908487:
    Branching Fraction Measurements of the SM Higgs with a Mass of 160 GeV at Future Linear e^+e^- Colliders
    - At $\sqrt{s}$ = 350 GeV, M_H = 160 GeV/c^2
  - » S. Moretti, Z. Phys. C 75 465-469 (1997)
    $W^\pm$ + 4 jet irreducible background events from QCD in top and Higgs searches at the NLC
  - » F. Gangemi, *et al.*, Eur. Phys. J. C9, 31-41 (1999)
    Six-fermion production and Higgs boson physics at future e^+e^- colliders

WW and ZZ Mass Plots

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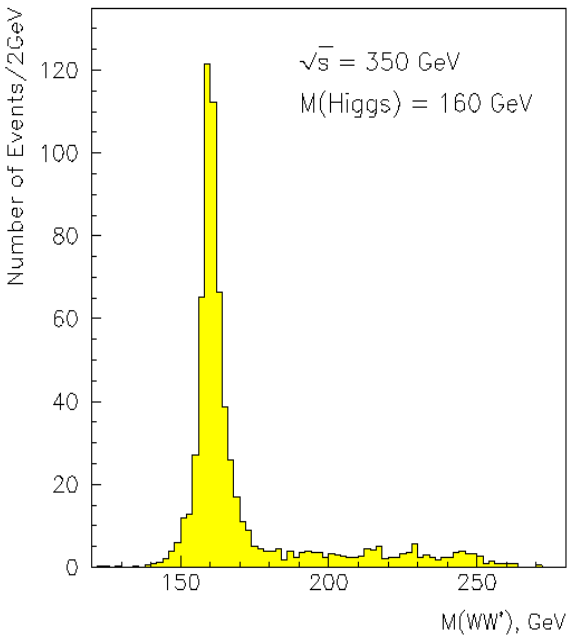
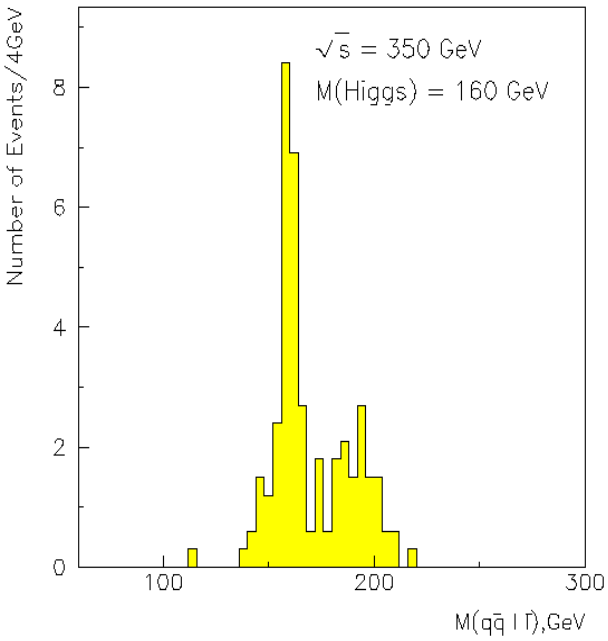
- $\sqrt{s}$ = 350 GeV M_H = 160 GeV/c^2
  - ⇒ $e^+e^- \rightarrow ZH$, $Z \rightarrow l^+l^-$
  - ⇒ 500 fb^{-1} at TESLA like collider (2 years at $3x10^{34}/cm^2/sec$
  - ⇒ 2.5% on $\sigma(ZH)*BF(H \rightarrow WW)*BF(Z \rightarrow l^+l^-)$
  - ⇒ 3.5% on $BF(H \rightarrow WW)$
  - ⇒ 14.5% on $BF(H \rightarrow ZZ)$





Plan?

- Repeat Study at:
  - ⇒ M_H = 180 GeV/c^2
  - ⇒ $\sqrt{s}$ = 500 GeV, 800 GeV, 1000 GeV
  - ⇒ WW, ZZ, and b bbar