CHARGED HIGGS SEARCH IN WH

yuko shinzaki

status

Charged Higgs search
▶ talk at LCWS14
- (theoretical) importance to search H to taunu channel

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- continue H to taunu analysis for smaller region of higgs mass

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▶ H to taunu channel
- mh vs Fhwz limit

▶ H to WZ channel
- optimization of the chi^2 definition → make a brief report
- WWZ analysis at Ecm 350 GeV

    … need new generator

6j reconstruction

▸ forced6-jet analysis using Durham algorithm

▸ selecting the jet pairs so that χ_1^2 is minimized

$$\chi_1^2 = (p_{j1}^{pair1} + p_{j2}^{pair1})^2 + (p_{j1}^{pair2} + p_{j2}^{pair2})^2 + (p_{j1}^{pair3} + p_{j2}^{pair3})^2$$

p_j : 3 vector momentum

▸ find prompt W by minimizing χ_2^2

$$\chi_2^2 = (\frac{M_{pair3} - m_W}{\sigma_W})^2$$

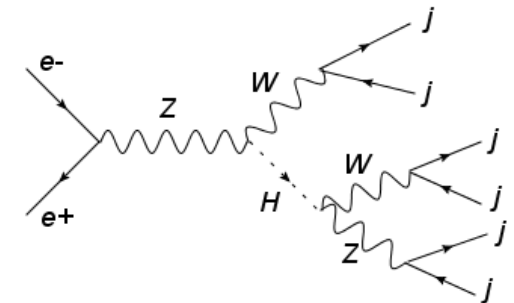m_W : mass of W($= 80.0$GeV)
m_H : mass of H($= 150$GeV)
σ_W : mass resolution($= 5.5$GeV)
σ_H : mass resolution($= 15$GeV)

▸ get W mass and calculate recoil mass

6j reconstruction

▸ forced6-jet analysis using Durham algorithm
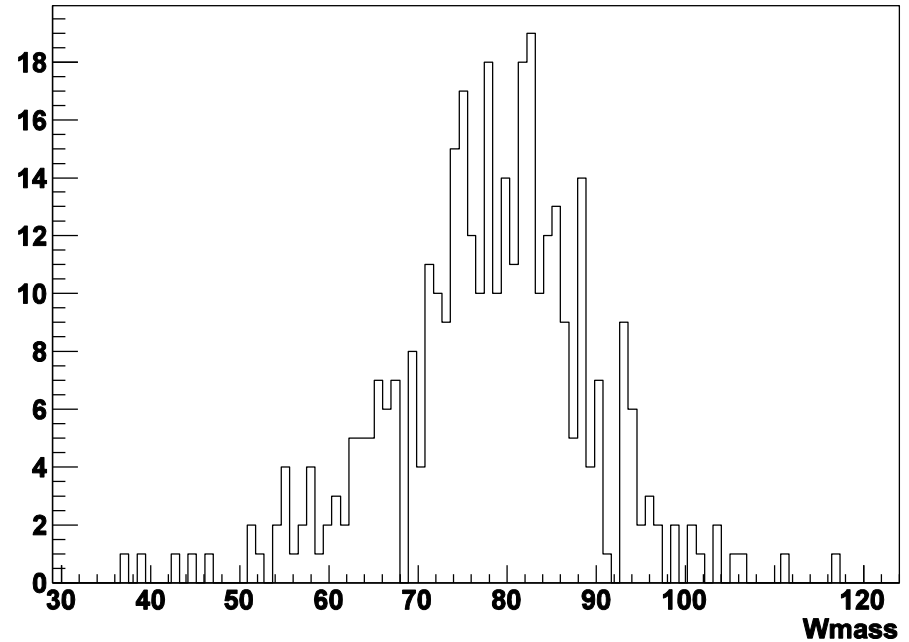
▸ selecting the jet pairs
▸find prompt W

$$\chi_1^2$$
$$= (p_{j1}^{pair1} + p_{j2}^{pair1})^2 + (p_{j1}^{pair2} + p_{j2}^{pair2})^2 + (p_{j1}^{pair3} + p_{j2}^{pair3})^2 + (\frac{M_{pair3} - m_W}{\sigma_W})^2$$

▸ get W mass and calculate recoil mass

p_j : 3 vector momentum
m_W : mass of W($= 80.0$GeV)
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W mass and recoil mass
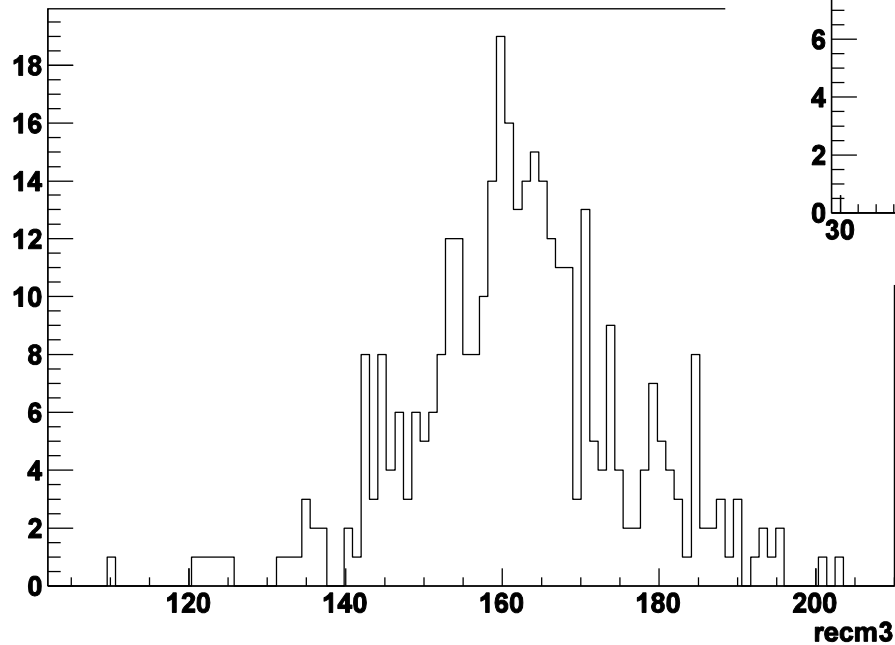
W mass

Wmass {nneutrino==0}

recm3 {nneutrino==0}

recoil mass

Higgs mass (reconstructed)

Hmass {nneutrino==0}