$H \to \tau^+\tau^-$ study
Update on 500 GeV $\nu\bar{\nu}h$

Shin-ichi Kawada

Hiroshima University

Review of 500 GeV analysis

$\frac{\Delta(\sigma \cdot \mathrm{Br})}{(\sigma \cdot \mathrm{Br})}$	**Cut-based**
$\nu\bar{\nu}h$	7.4%
$q\bar{q}h$	5.0%

This is the result which I reported on JPS meeting.

Today: $\nu\bar{\nu}h$ analysis with TMVA

Input parameters for TMVA

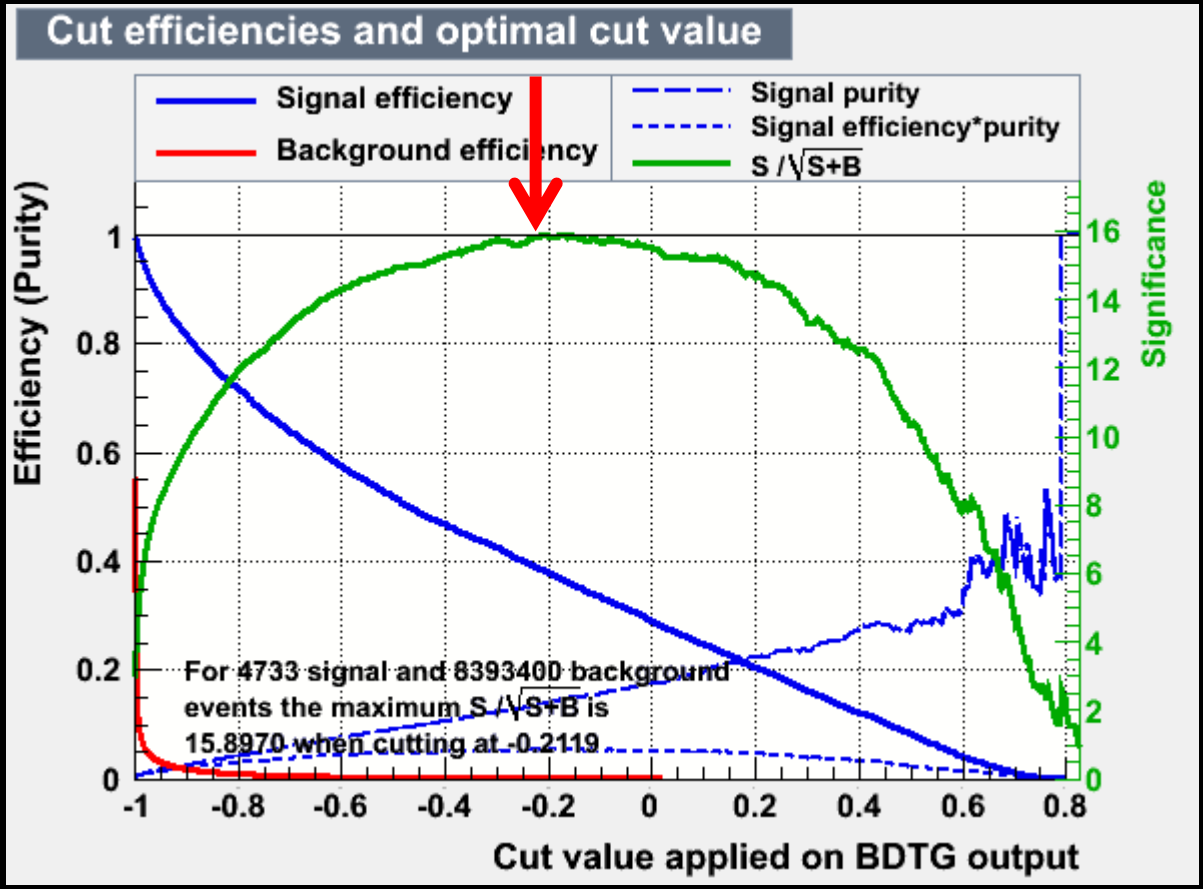
of tracks, M_{vis}, E_{vis},
P_t, $\cos\theta_{\mathrm{miss}}$, thrust,
} 6 basic parameters

of $\tau^{+(-)}$, $M_{\tau^+\tau^-}$, $\cos\theta_{\tau^+\tau^-}$, $\cos\theta_{\mathrm{acop}}$,
$\log_{10}|\min d_0\mathrm{sig}|$, $\log_{10}|\min z_0\mathrm{sig}|$
} 7 parameters from tau

total: 13 parameters

pre-selection: # of $\tau^{+(-)} \geq 1$

TMVA output (BDTG) and Results



remained events:

$N_{\mathrm{sig}} = 1819$

$N_{\mathrm{bkg}} = 11274$

significance:

$$\frac{S}{\sqrt{S+B}} = 15.9\sigma$$

$$\therefore \frac{\Delta(\sigma\cdot\mathrm{Br})}{(\sigma\cdot\mathrm{Br})} = \mathbf{6.3\%}$$

Summary of 500 GeV analysis

$\frac{\Delta(\sigma \cdot \mathrm{Br})}{(\sigma \cdot \mathrm{Br})}$	Cut-based	TMVA
$\nu\bar{\nu}h$	7.4%	**6.3%**
$q\bar{q}h$	5.0%	???

Now working and checking...