

Top quark momentum distribution in the threshold region of pair production

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Γ_t and top momentum distribution

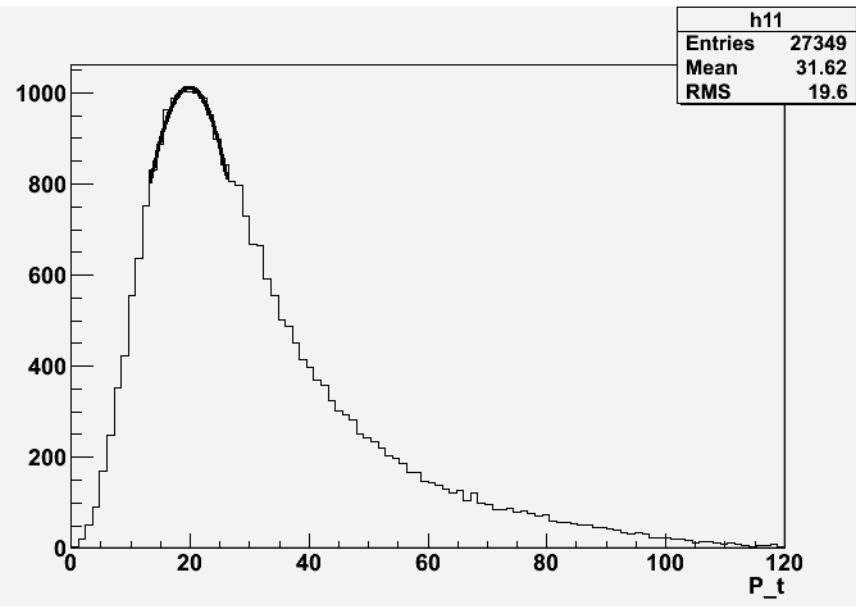
- **Estimating the statistic uncertainty of decay width**

$$\Gamma_t \simeq \frac{G_F m_t^3}{8\sqrt{2}\pi} |V_{tb}|$$

- I want to know the statistic uncertainty of $|V_{tb}|$.
- Peak position of momentum distribution have relation to $|V_{tb}|^2$
 - I estimate the peak position of momentum distribution, using simulation.

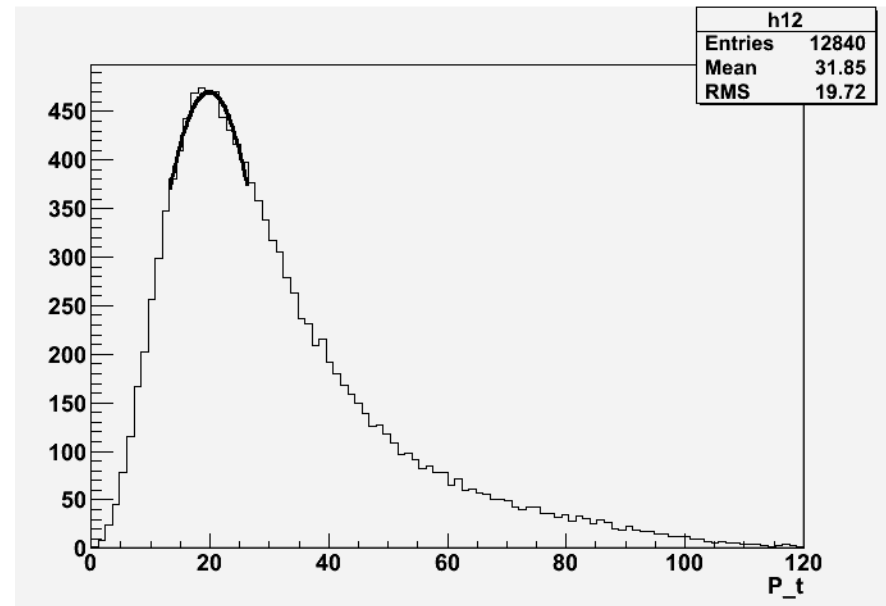
momentum distribution

$v_s=347\text{GeV}$, $\alpha_s=0.12$, $m_t=174\text{GeV}$,
 $L_{\text{int}}=100\text{fb}^{-1}$ (respectively), $|V_{tb}|=1$



Left hand

$$P_{\text{peak}} = 19.9 \pm 0.243 \text{ GeV}$$

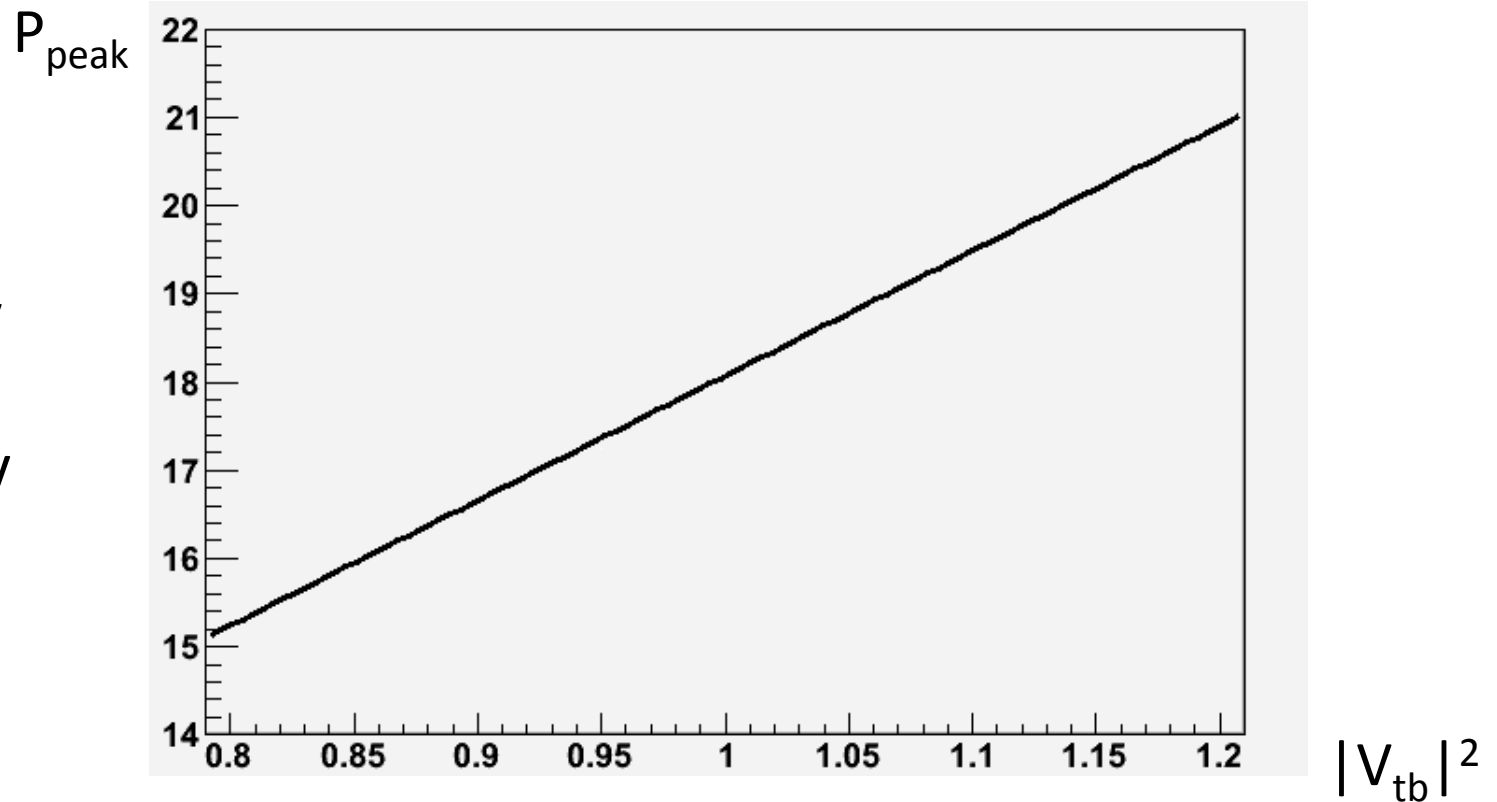


Right hand

$$P_{\text{peak}} = 19.9 \pm 0.347 \text{ GeV}$$

The momentum peak position of top as a function of $|V_{tb}|^2$

$v_s=347\text{GeV}$
 $\alpha_s=0.12$
 $m_t=174\text{GeV}$



This is made by Physsim and is theoretical.

I'm going to make the new figure, using simulation measurement .