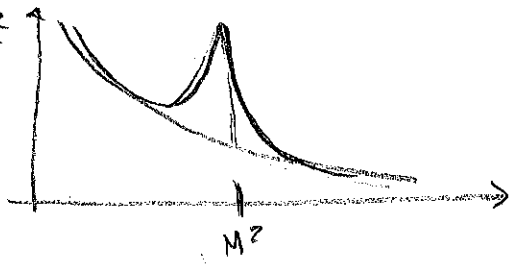
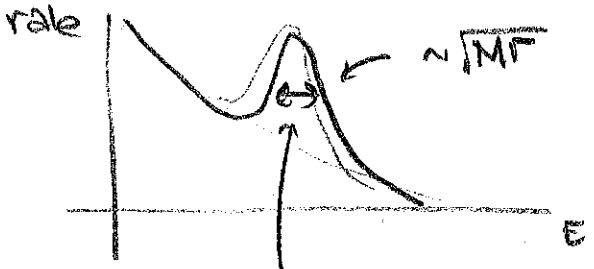
1. rate



cm energy = $\sqrt{p^2}$

M^2 ↑ ~ 100 GeV

2. $\text{RATE} \sim \left| \frac{1}{p^2 - M^2 + iM\Gamma} \right|^2 = \frac{1}{(p^2 - M^2) + M^2\Gamma^2}$



(sort BECAUSE OF UNITS)

$(M\Gamma)^2$ controls the width of this bump

$M\Gamma \sim (10\ \text{GeV})^2$

3. $\Gamma_{PDG} = 2.5\ \text{GeV}$ ← not bad.

↑ 2.5 GeV × 100 GeV = 40 GeV

4. $[\Gamma] = 1 \rightarrow t = 1/\Gamma$ ← $1/\Gamma$ is a time scale. IDENTIFY IT W/ LIFETIME

$\approx \frac{1}{2.5\ \text{GeV}}$