Higgs +1 Jet Study
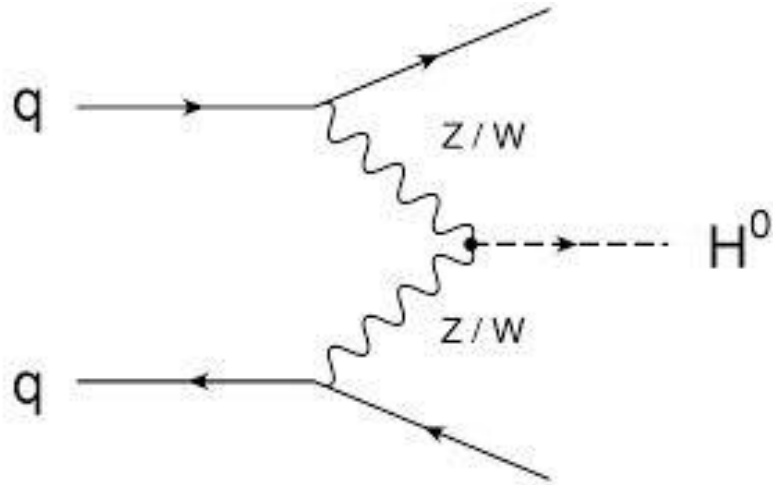
Nicholas Mehrle
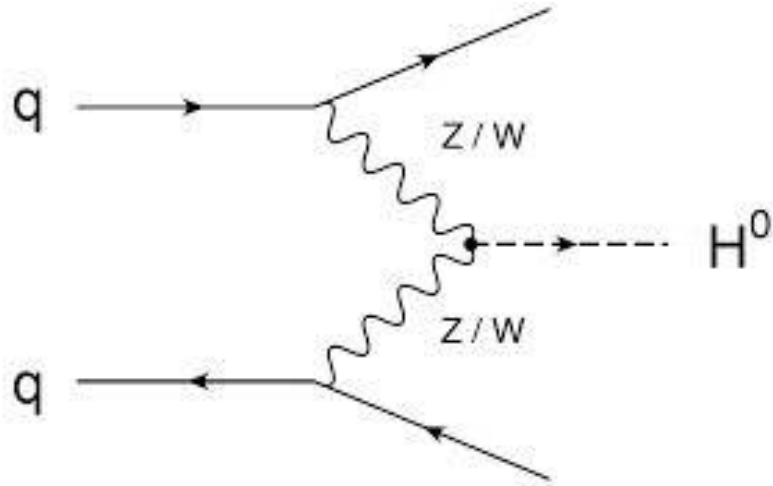
Affiliations
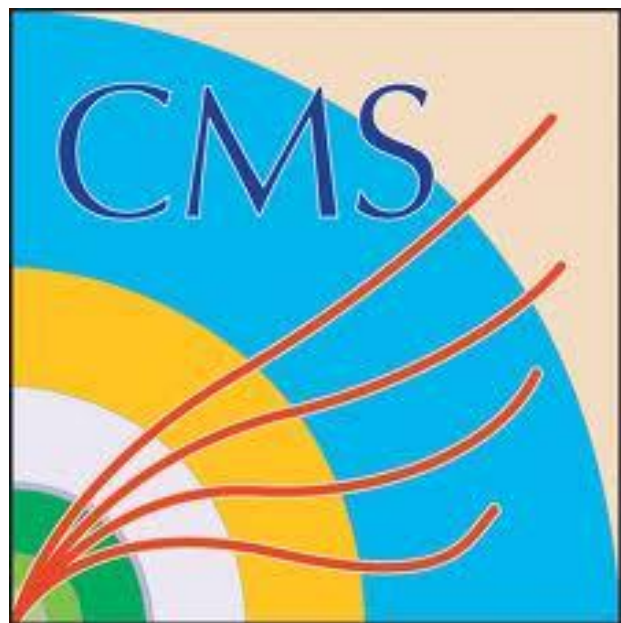
Activities

- 1 Jet Study

- 2 Jet Study

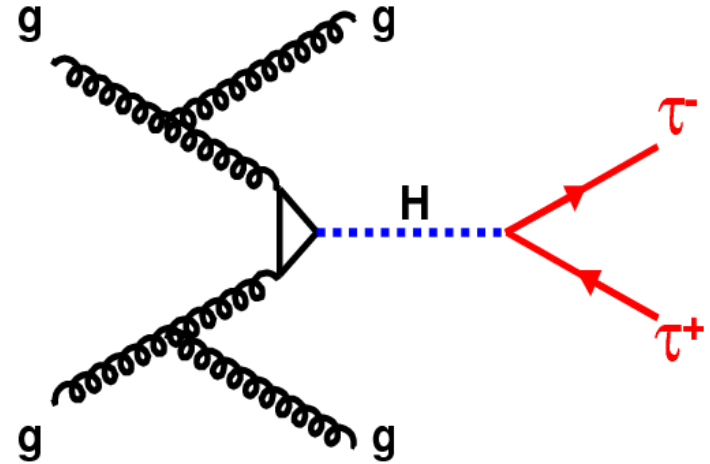- Alignment

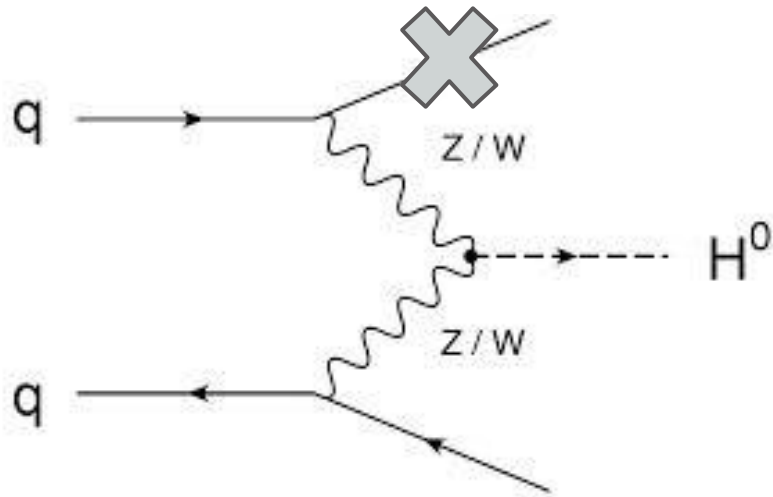# Major Higgs Production Mechanisms

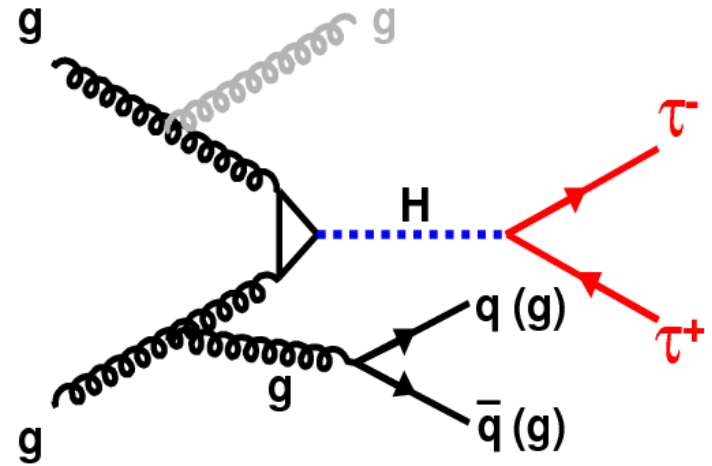VBF

Major Higgs Production Mechanisms

VBF

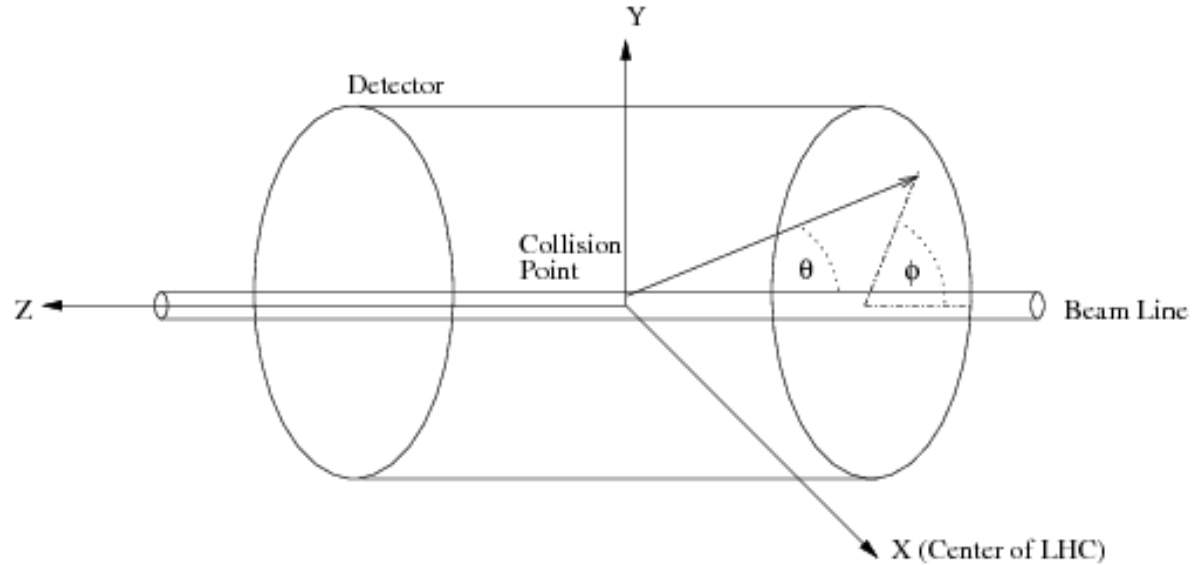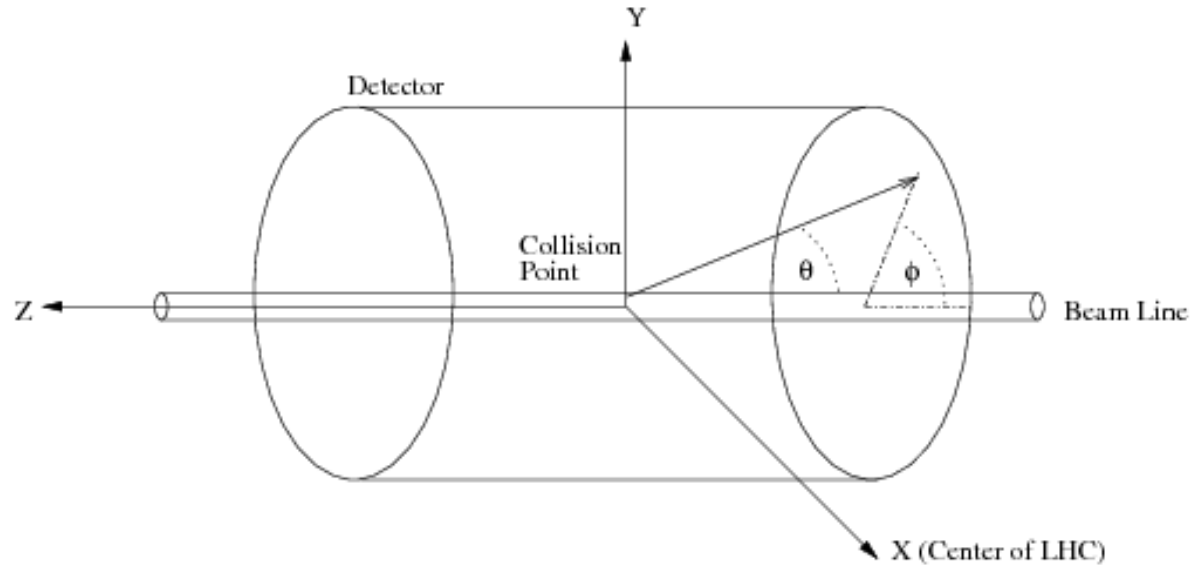Gluon Fusion

Major Higgs Production Mechanisms

VBF

Gluon Fusion

Fake Jet Construction

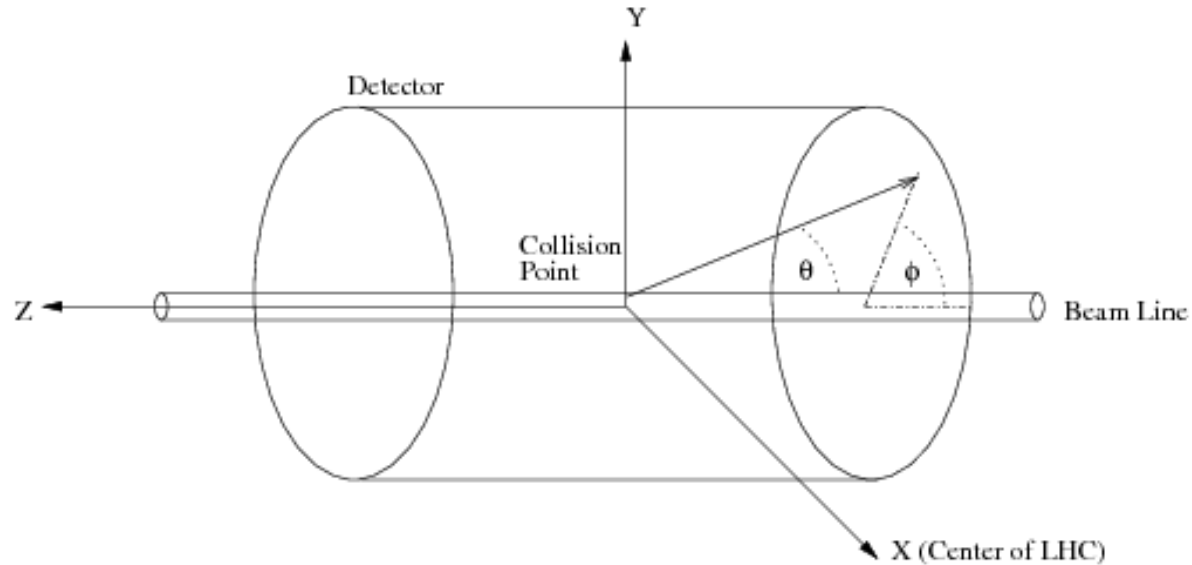# Fake Jet Construction

Balance momentum in X-Y Plane

Fake Jet Construction

Pseudorapidity: $\eta = \log \left[\tan \left(\dfrac{\theta}{2} \right) \right]$

Discriminant

$$\frac{P_{vbf}}{P_{vbf} + P_{HJ}}$$

Discriminant

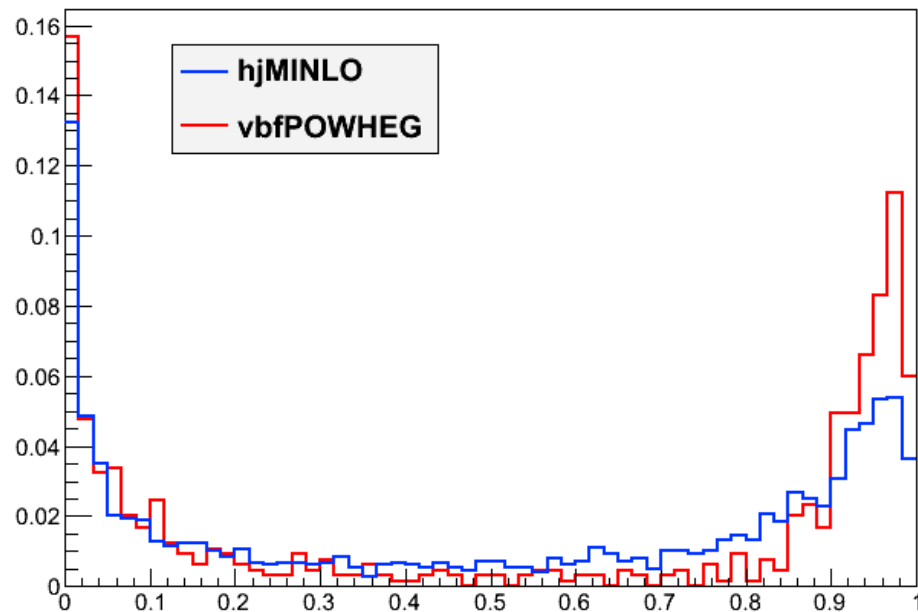$$\frac{P_{vbf}}{P_{vbf} + P_{HJ}}$$

$$\eta = 2.4$$

Discriminant
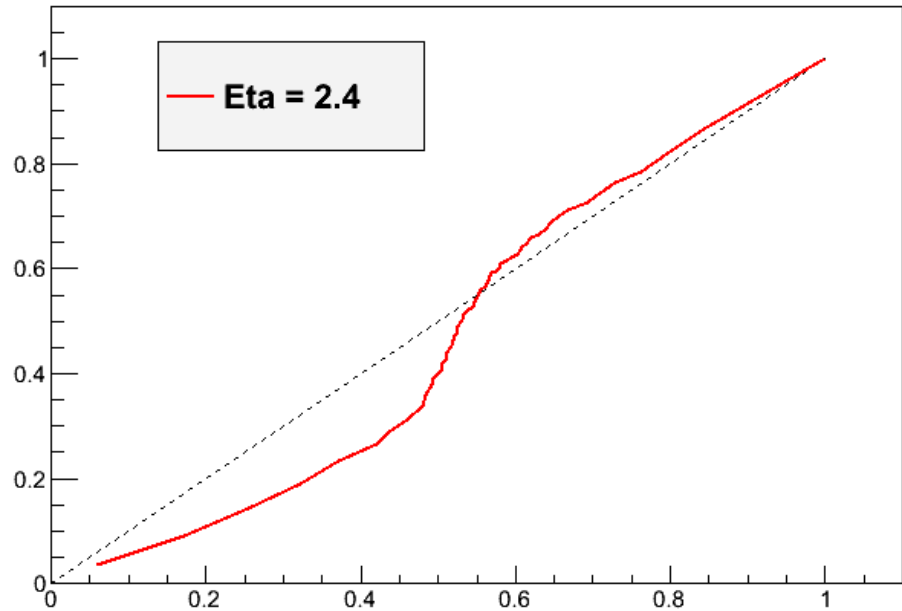
$$\frac{P_{vbf}}{P_{vbf} + P_{HJ}}$$
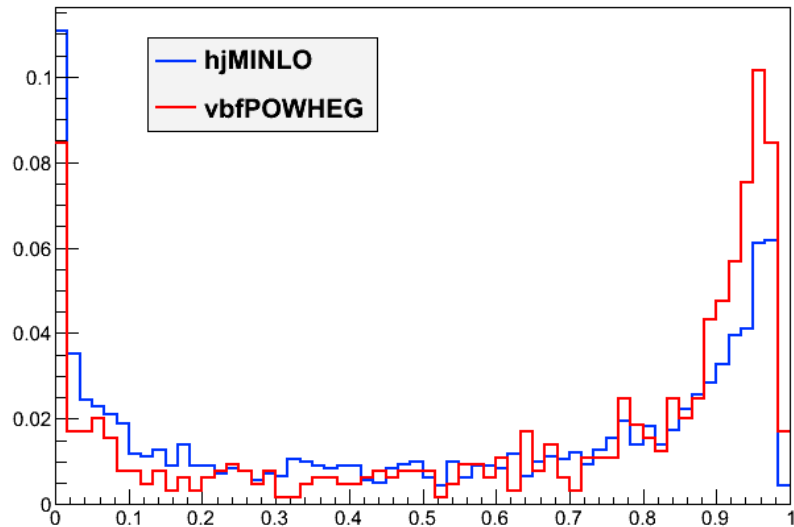
$$\eta = 2.4$$

Eta = 2.4

Discriminant

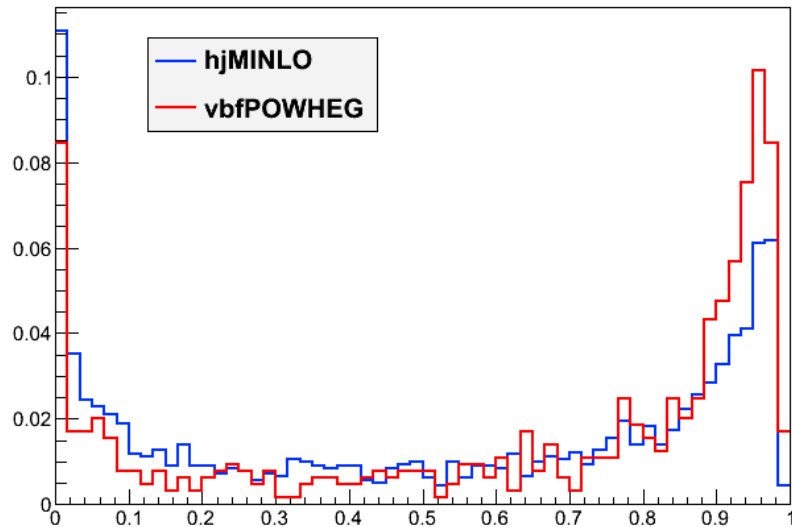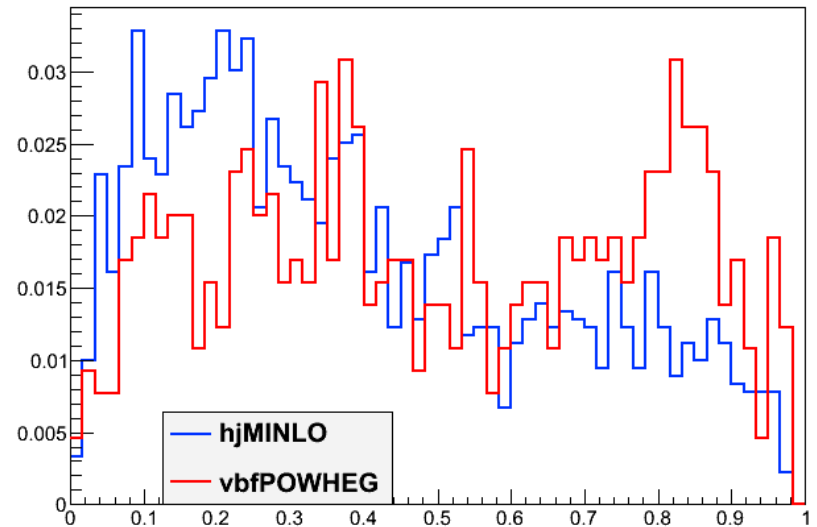$$\frac{P_{vbf}}{P_{vbf} + P_{HJ}}$$

$$\eta = 2.4$$

Dependant on Fake Jet

Dependant on Fake Jet
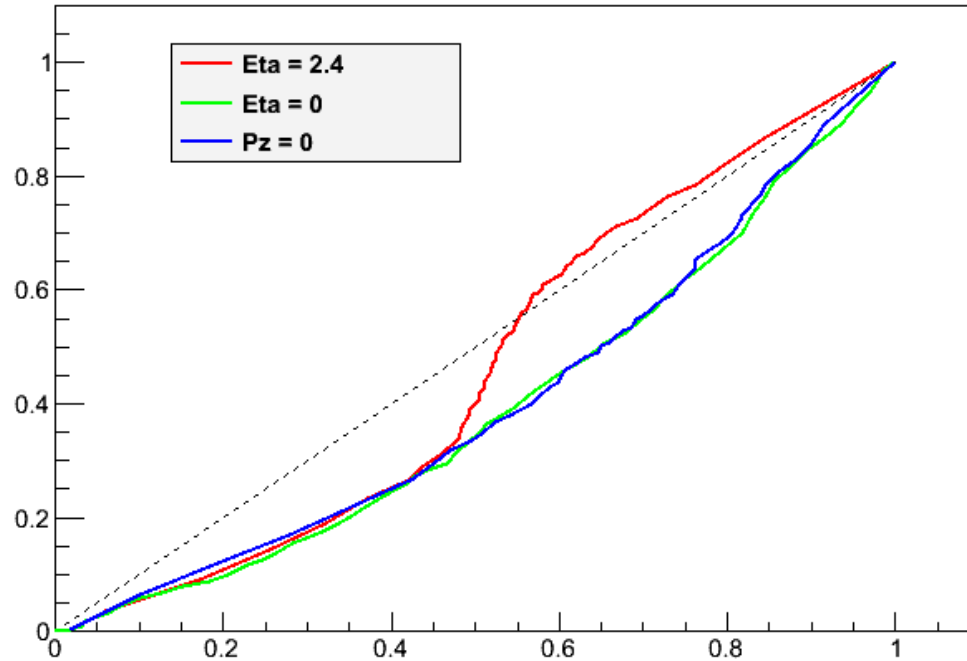
Dependant on Fake Jet

Quark Gluon Likelihood

- Quark Gluon Likelihood

$$\frac{1}{1 + \frac{P_{Gluon}}{P_{Quark}}}$$
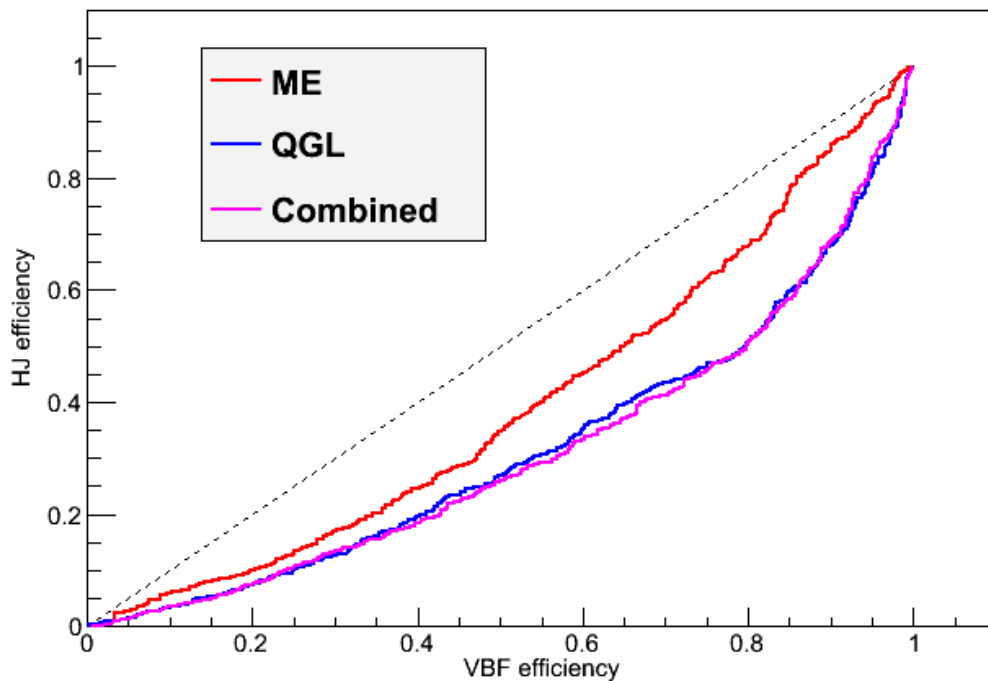
Quark Gluon Likelihood

- Quark Gluon Likelihood

$$\frac{1}{1 + \frac{P_{Gluon}}{P_{Quark}}}$$

- Combined

$$\frac{1}{1 + \frac{P_{Gluon}}{P_{Quark}} \times \frac{P_{hj}}{P_{vbf}}}$$

Quark Gluon Likelihood

Integration

$$\eta \in \{-5, -4.8, \ldots 5\}$$
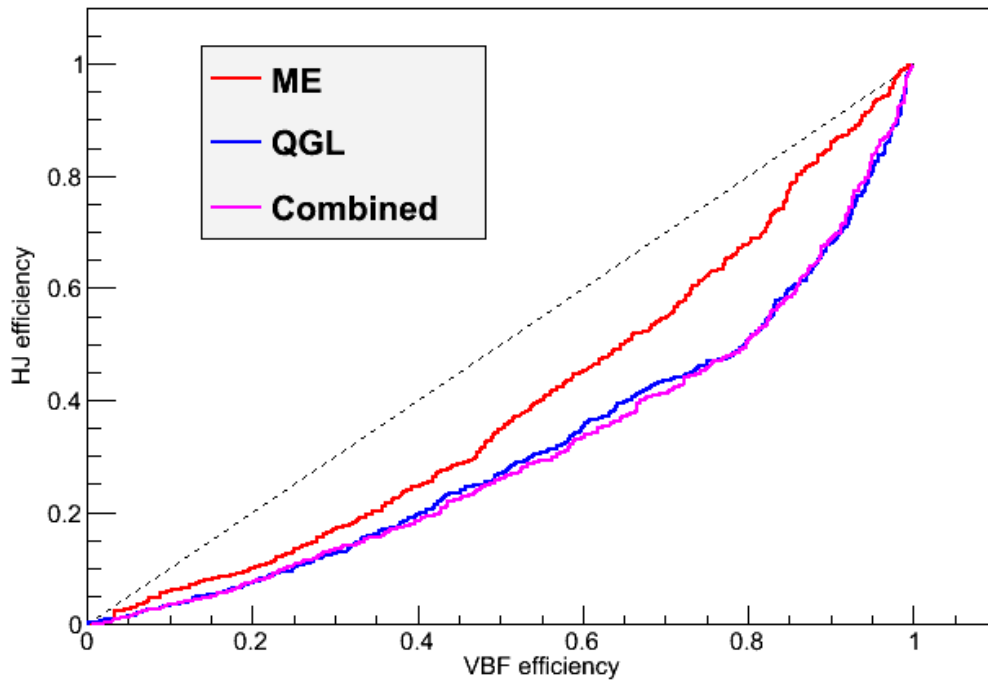
θ from ~0.01 to ~3.13

Integration

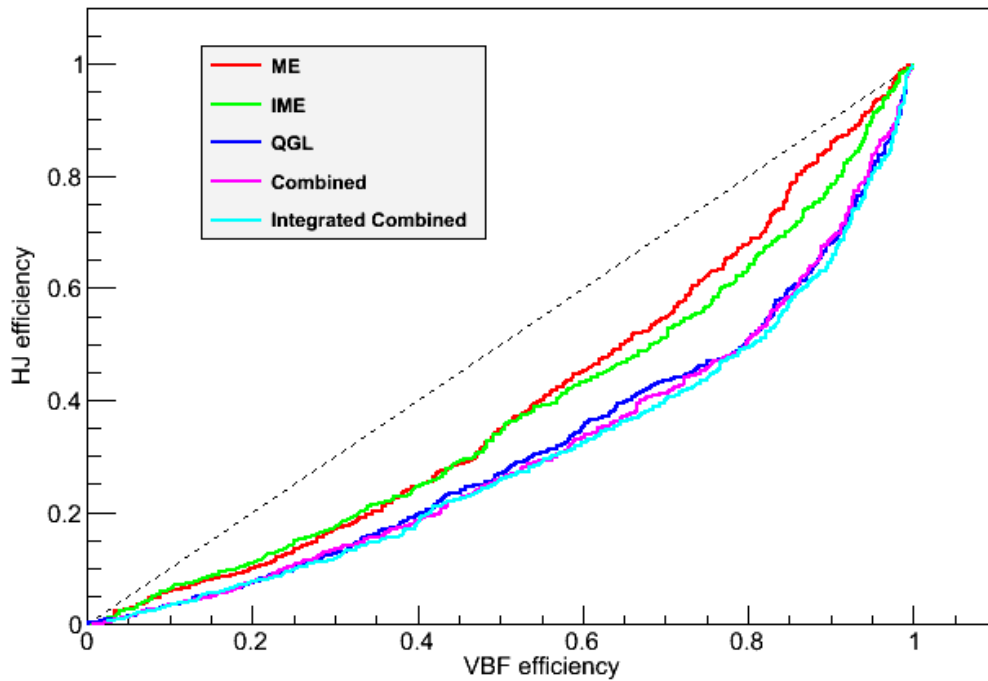$$\eta \in \{-5, -4.8, \ldots 5\}$$

θ from ~0.01 to ~3.13

$$P_{vbf} = \frac{1}{N} \sum P_{vbf}(\eta)$$

Integration

Integration

Travel