

Step 1: Normalisation

Fit: V+jet, VV and top
(QCD CR)

$$F_B(x = \min\Delta\phi(j, E_{T,miss})) = \underbrace{Q_0 e^{-Q_1 x} (1 + Q_2 x + Q_3 x^2)}_{\text{Fixing the parameters } F_B(x)}$$

Fixing the parameters $F_B(x)$

Fit: Data
(QCD CR)

$$F(x) = \underbrace{Q_0 e^{-Q_1 x} (1 + Q_2 x + Q_3 x^2)}_{F_B(x)} + \underbrace{P_0 e^{-P_1 x} + P_2}_{F_{QCD}(x)}$$

$F_B(x)$

$F_{QCD}(x)$

Extrapolate to SR

$$N_{QCD}^{SR} = \int_A^\pi F_{QCD}(x) dx, \text{ with } A = 0.5 \text{ (1.8)}$$

Step 2: Shape

Data
(QCD CR)

$$m_{jj}(QCD) = m_{jj}(Data) - \sum m_{JJ}(bkg)$$

m_{jj}^{SR} is obtained by scaling

$m_{jj}^{CR}(QCD)$ to N_{QCD}^{SR}