# Rb measurement at CEPC MC Level

**Bo Li**

# Rb method

**Correction Factor**

Get From Mixed MC Sample

$$\frac{N_t}{2N_{had}} = R_b\varepsilon_b + R_c\varepsilon_c + (1 - R_b - R_c)\varepsilon_{uds}$$

$$\frac{N_{tt}}{N_{had}} = C_b R_b \varepsilon_b^2 + C_c R_c \varepsilon_c^2 + C_{uds}(1 - R_b - R_c)\varepsilon_{uds}^2$$

$R_c$, $\varepsilon_c$, $\varepsilon_{uds}$
$C_b$, $C_c$, $C_{uds}$
Get from MC

$$C_b = \frac{\varepsilon_{2\,jet-tagged}}{(\varepsilon_{1\,jet-tagged})^2}$$

$$\frac{N_t}{N_{had}} = R_b\varepsilon^I{}_b + R_c\varepsilon^I{}_c + (1 - R_b - R_c)\varepsilon^I{}_{uds}$$ jet1 Btag work point I

$$\frac{N_t}{N_{had}} = R_b\varepsilon^J{}_b + R_c\varepsilon^J{}_c + (1 - R_b - R_c)\varepsilon^J{}_{uds}$$ jet2 Btag work point J

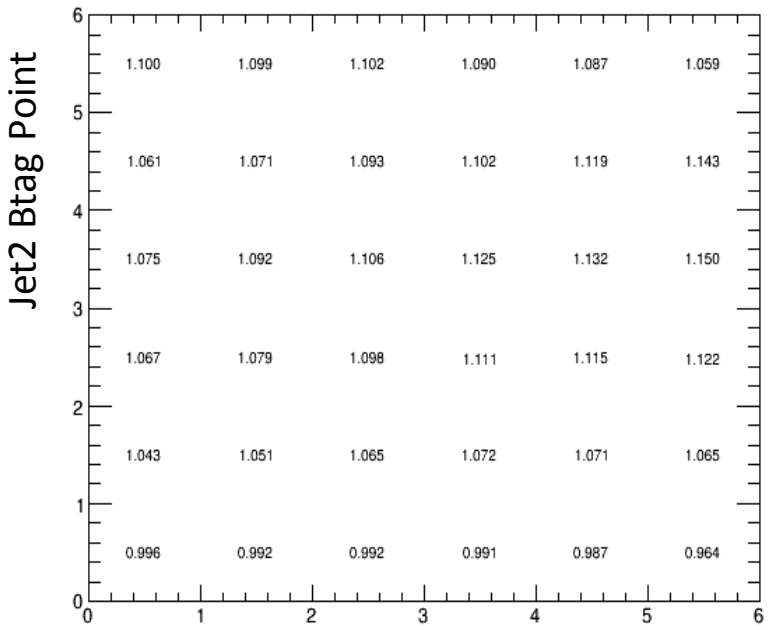
$$\frac{N_{tt}}{N_{had}} = C_b R_b \varepsilon^I{}_b\varepsilon^J{}_b + C_c R_c \varepsilon^I{}_c\varepsilon^J{}_c + C_{uds}(1 - R_b - R_c)\varepsilon^I{}_{uds}\varepsilon^J{}_{uds}$$

$$C_b = \frac{\varepsilon_{2\,jet-tagged}}{\varepsilon^I{}_b\varepsilon^J{}_b}$$

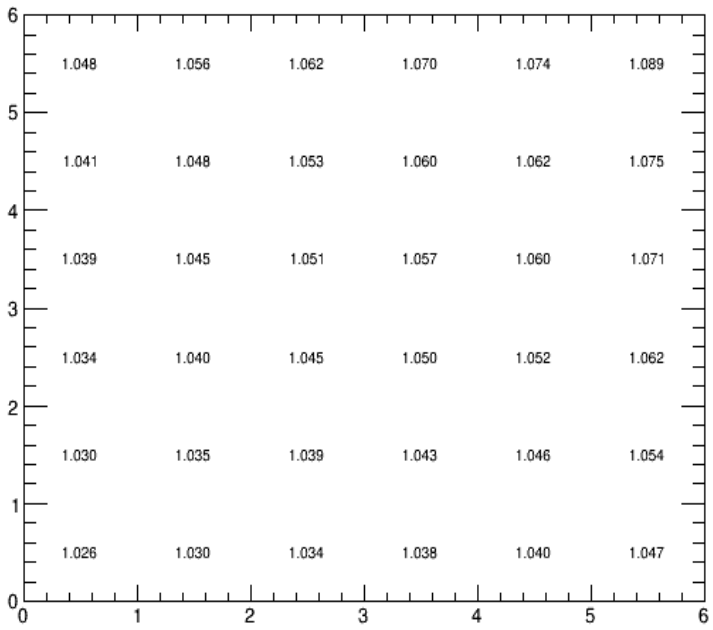
$$C_b = \frac{\varepsilon_{2\,jet-tagged}}{\varepsilon^I{}_b\,\varepsilon^J{}_b}$$

I : Prob>0.6 >0.7 >0.8 >0.9 >0.95 >0.99

J : Muon_Pt>0GeV >5 >10 >15 >20 >25



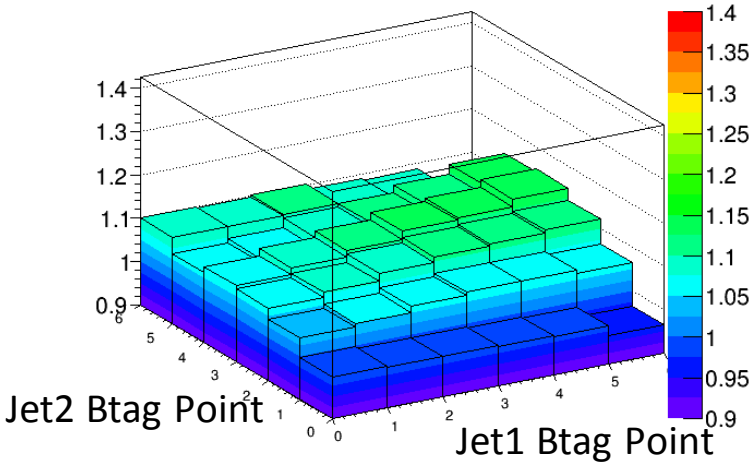

J : Prob>0.6 >0.7 >0.8 >0.9 >0.95 >0.99

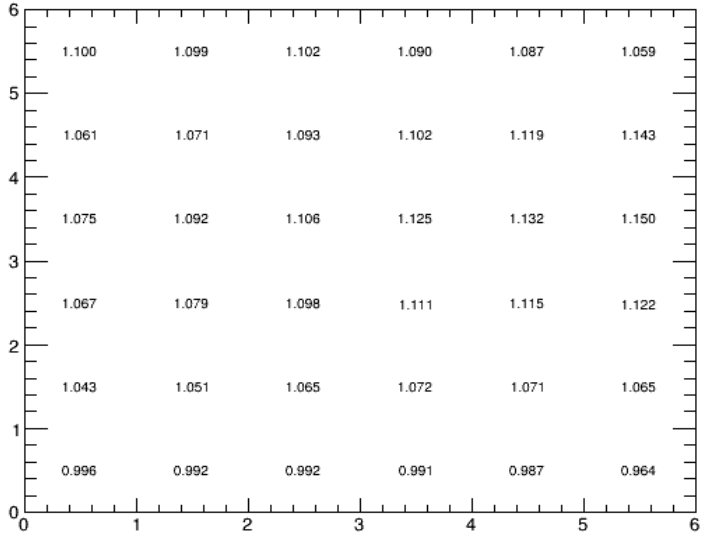


# New version

zbb

J : Muon_Pt>0GeV >5 >10 >15 >20 >25

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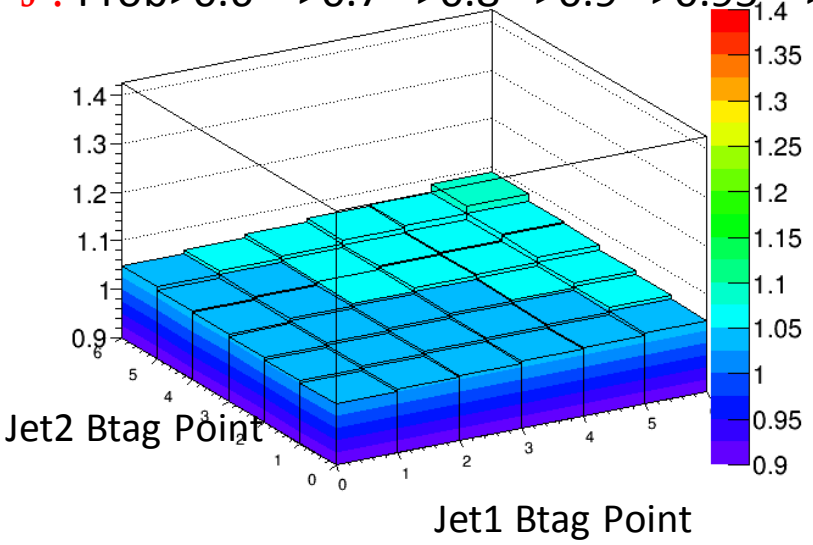
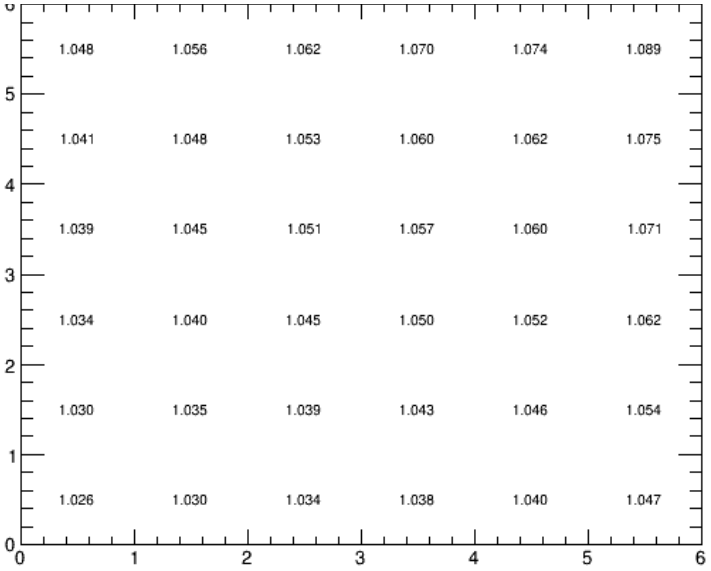
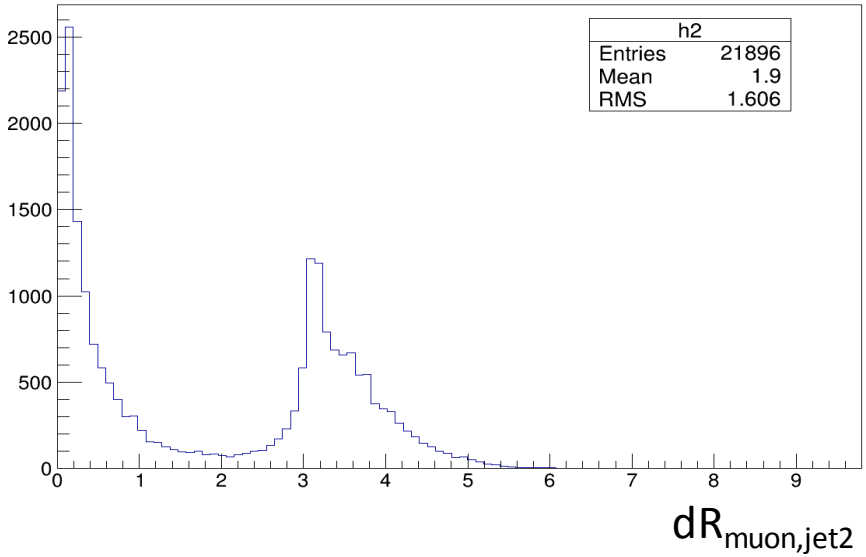
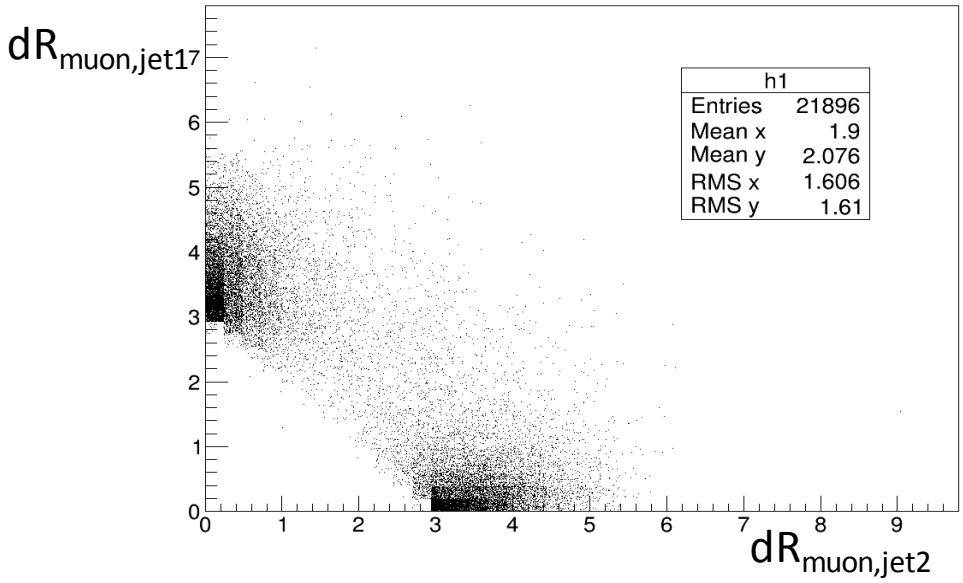
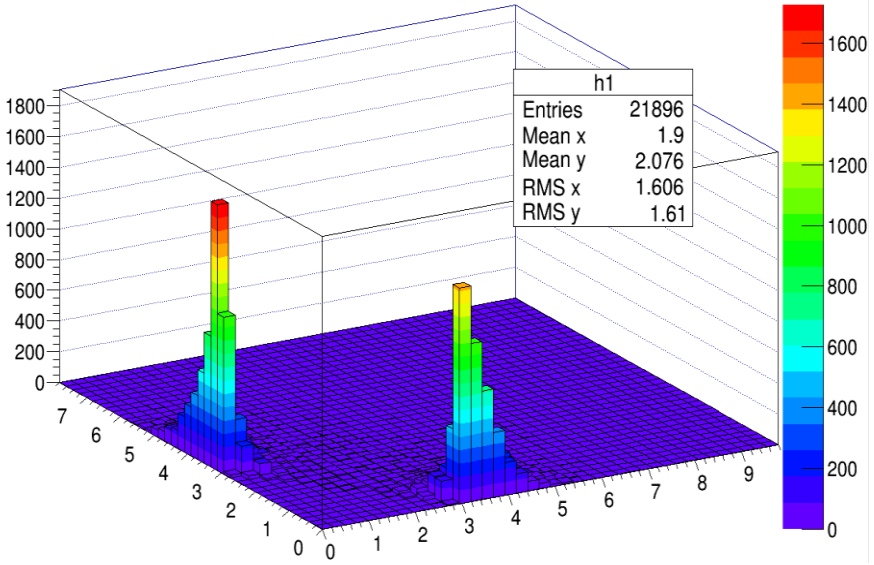


J : $dR_{muon,jet2}$ <0.5 <0.4 <0.3 <0.2 <0.1 <0.05



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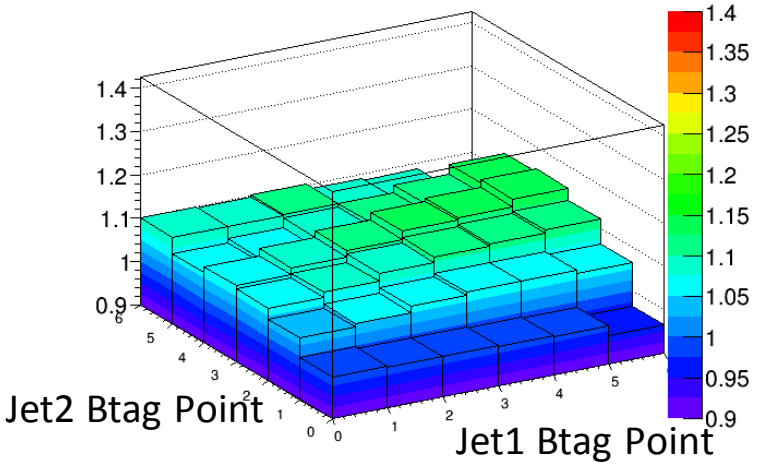


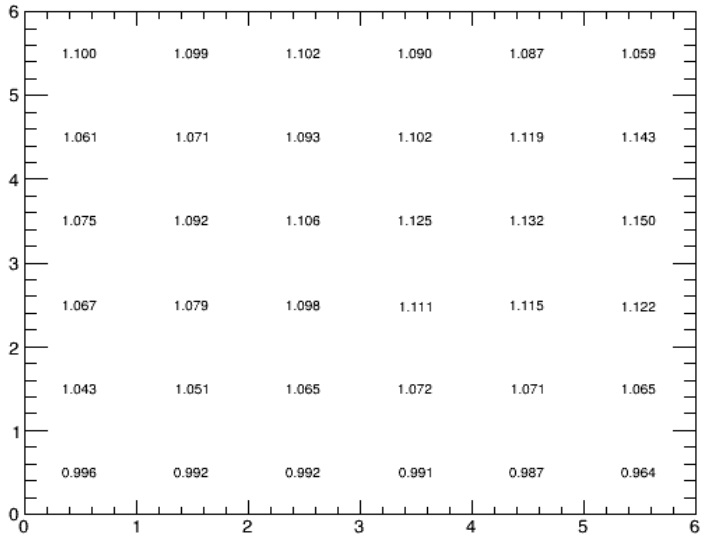


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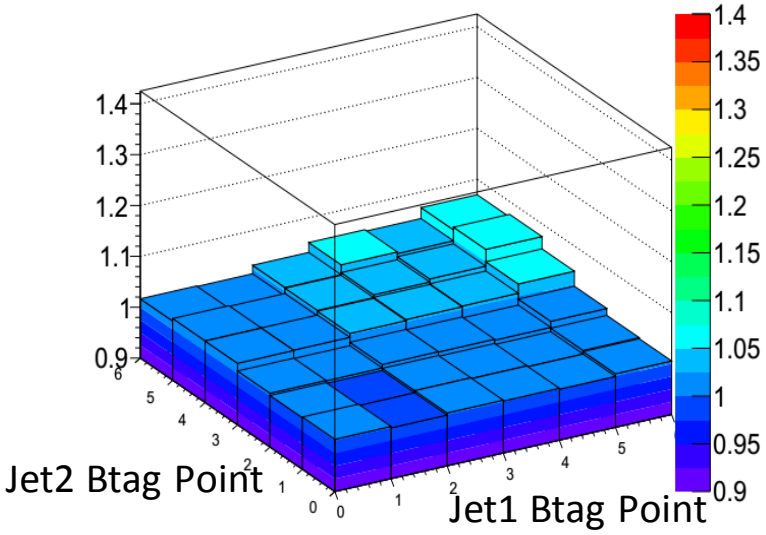


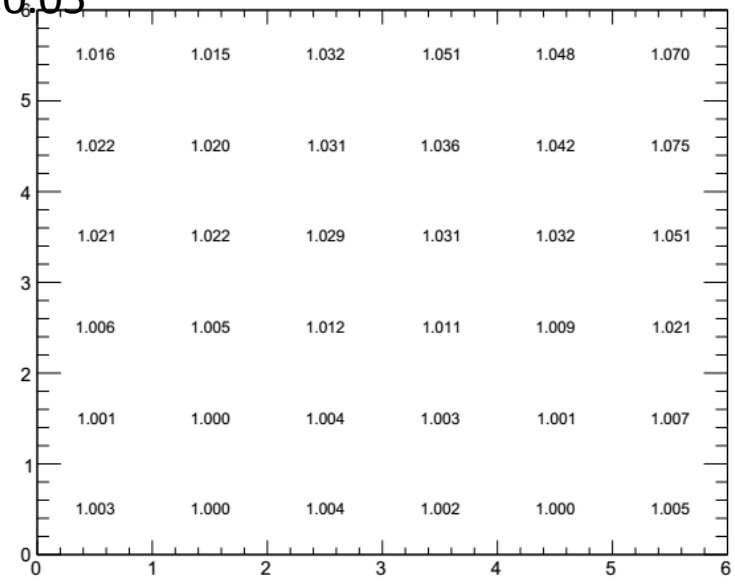

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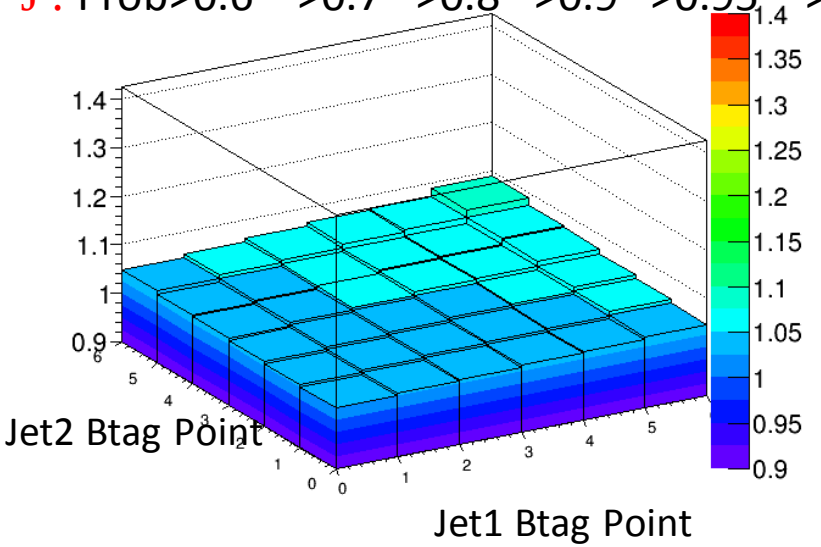


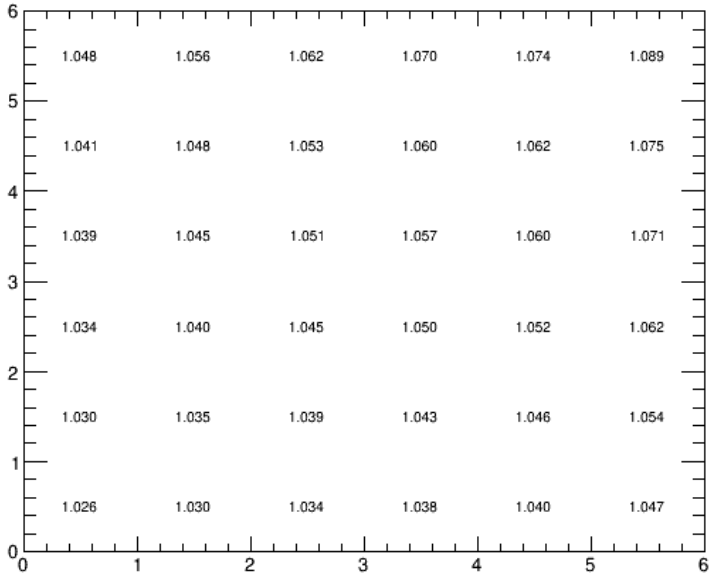


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