

Weekly Report

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2LSS analysis

➤ Real lepton CR

To solve mismodeling in $80\text{GeV} < m_{ll} < 100\text{GeV}$

- Previous defined : dominated by Z+jets
 - OS sign, ee/uu channel, no bjet
- Ttbar en-riched region
 - OS sign, eu/ue channel , ≥ 1 bjet

Closure test: using ttbar samples

➤ Derived from truth

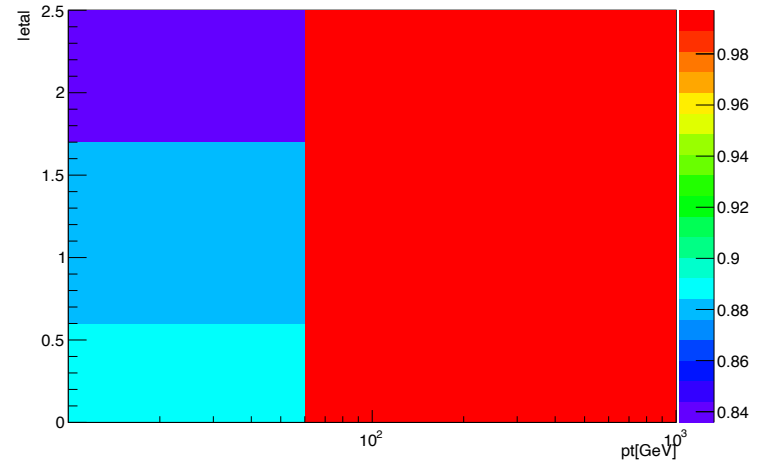
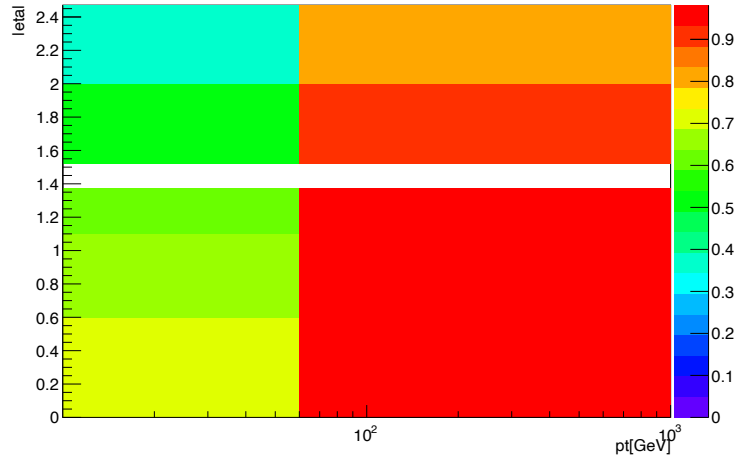
- Prompt lepton: using MCTruthClassifier: $T = 2$ || $T = 6$
- Fake lepton : neither a prompt nor a QmisID

➤ Real efficiency : two exactly prompt lepton

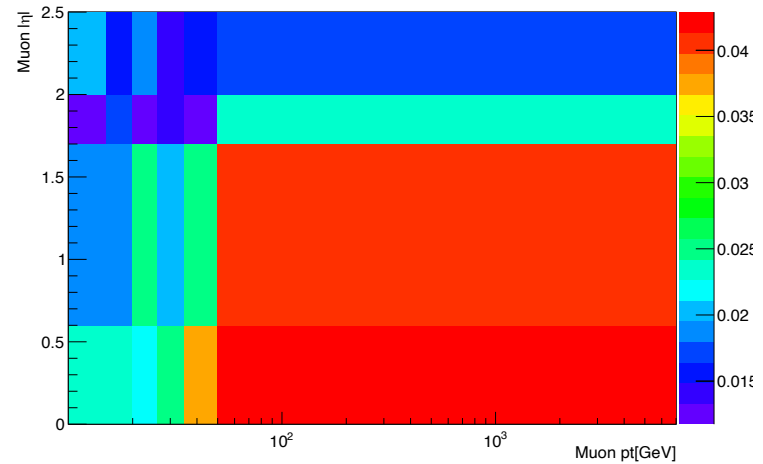
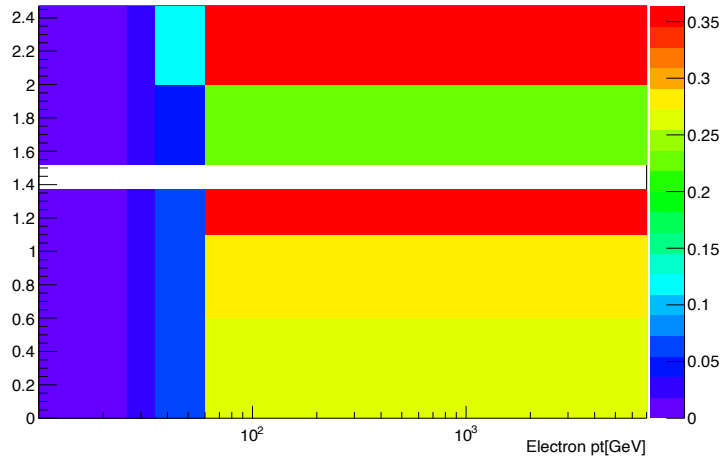
➤ Fake efficiency : probe lepton an actually fake

Results

eff real



eff fake



Eta, pt 2D distribution

2020/9/7

Closure test:

Apply MM package, output: event by event weight

➤ MM : sum of weight of all baseline leptons(all 4 sideband)

$$\underline{N_{TT}^f = N_{TT}^{rf} + N_{TT}^{fr} + N_{TT}^{ff} = \epsilon_{r,1}\epsilon_{f,2}N^{rf} + \epsilon_{r,2}\epsilon_{f,1}N^{fr} + \epsilon_{f,1}\epsilon_{f,2}N^{ff} .}$$

➤ MC : truth fakes from two tight leptons

((!lep_isPrompt_0&&!lep_isQMisID_0) || (!lep_isPrompt_1&&!lep_isQMisID_1)) &&Tight

SR	total	ee	mumu	emu
MM fake is	279.972796	13.385383	156.978734	109.608682
MC fake is	32.233865	15.271042	12.598391	4.364433

CR	total	ee	mumu	emu
MM fake is	1778.096049	79.304989	991.949674	706.841386
MC fake is	223.235006	101.761051	84.637018	36.836937