



中国科学技术大学

University of Science and Technology of China

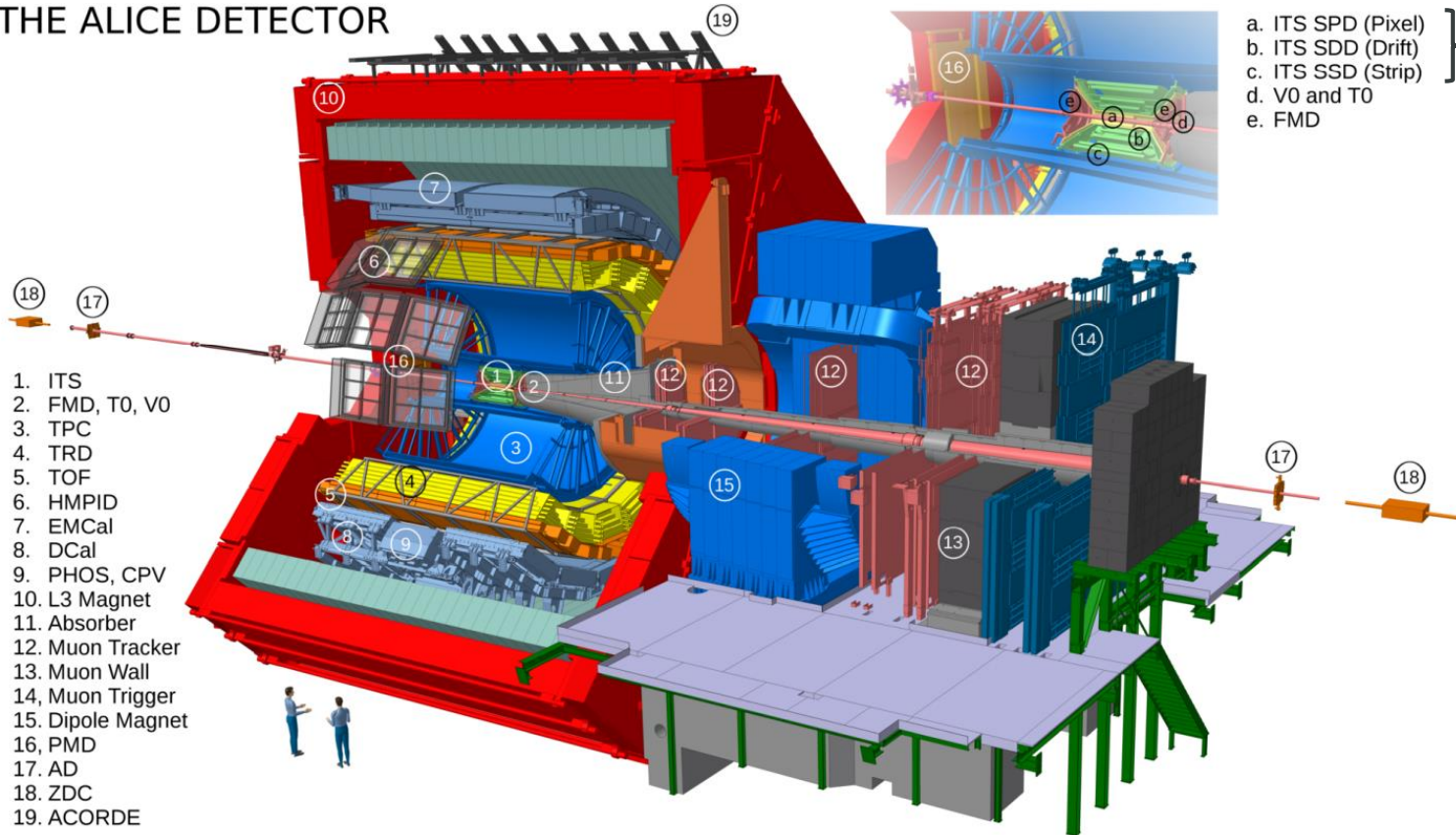
ITS-TPC matching efficiency in run2 data

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ITS detector in ALICE

THE ALICE DETECTOR



ITS for run1 and run2 : $3 \times 2 = 6$ layers

Datasets and Analysis cuts

➤ Dataset :

➤ Run2 LHC5n pass5 176 million

➤ 244340 244343 244351 244355 244359
244364 244377 244411 244416 244418
244421 244453 244456 244480 244481
244482 244483 244484 244531 244540
244542 244617 244618 244619 244626
244627 244628

➤ Event cuts:

➤ $-10 \text{ cm} < VtxZ < 10 \text{ cm}$

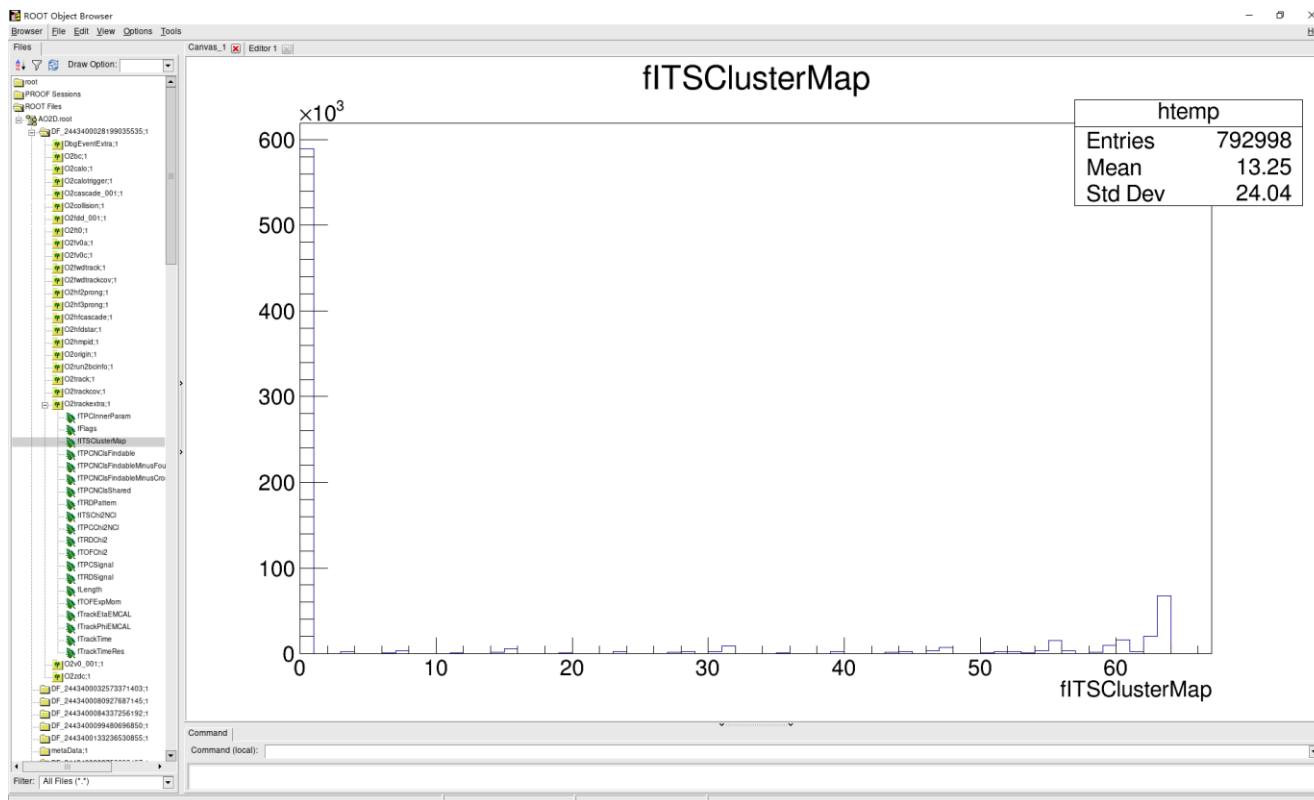
➤ Track cuts:

➤ $TPCncls > 90$

➤ $TPCchi2 < 4$

➤ $-0.9 < \eta < 0.9$

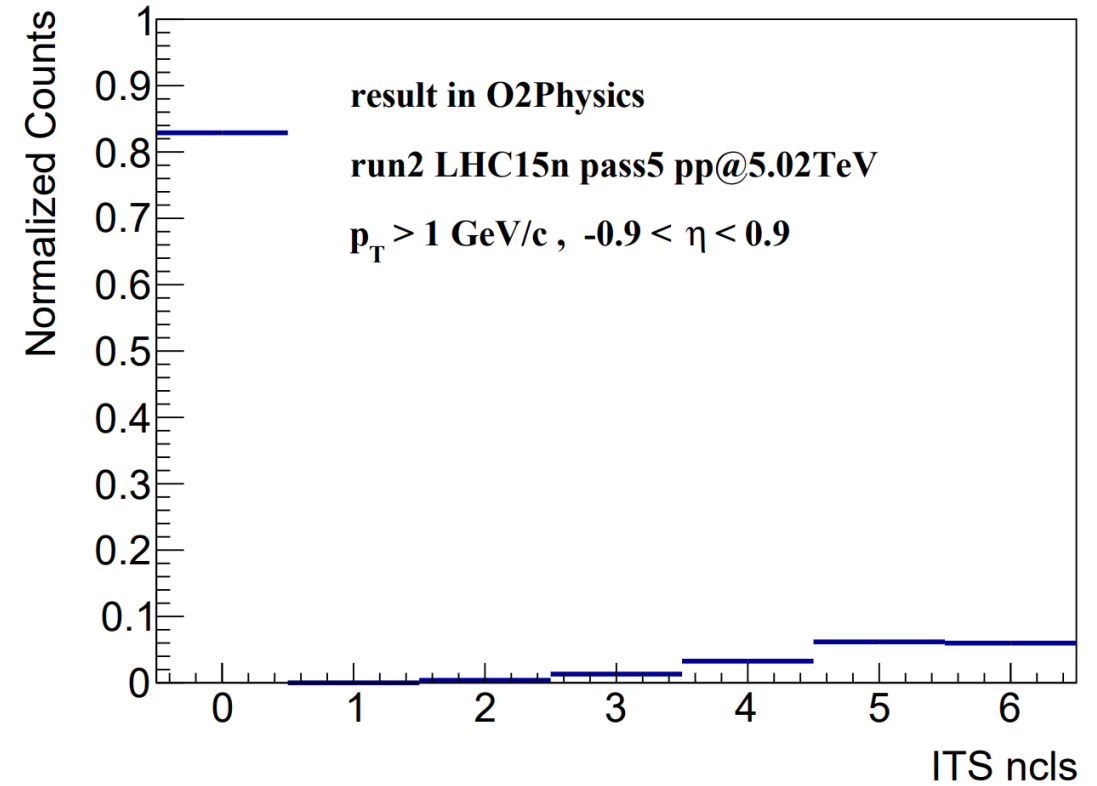
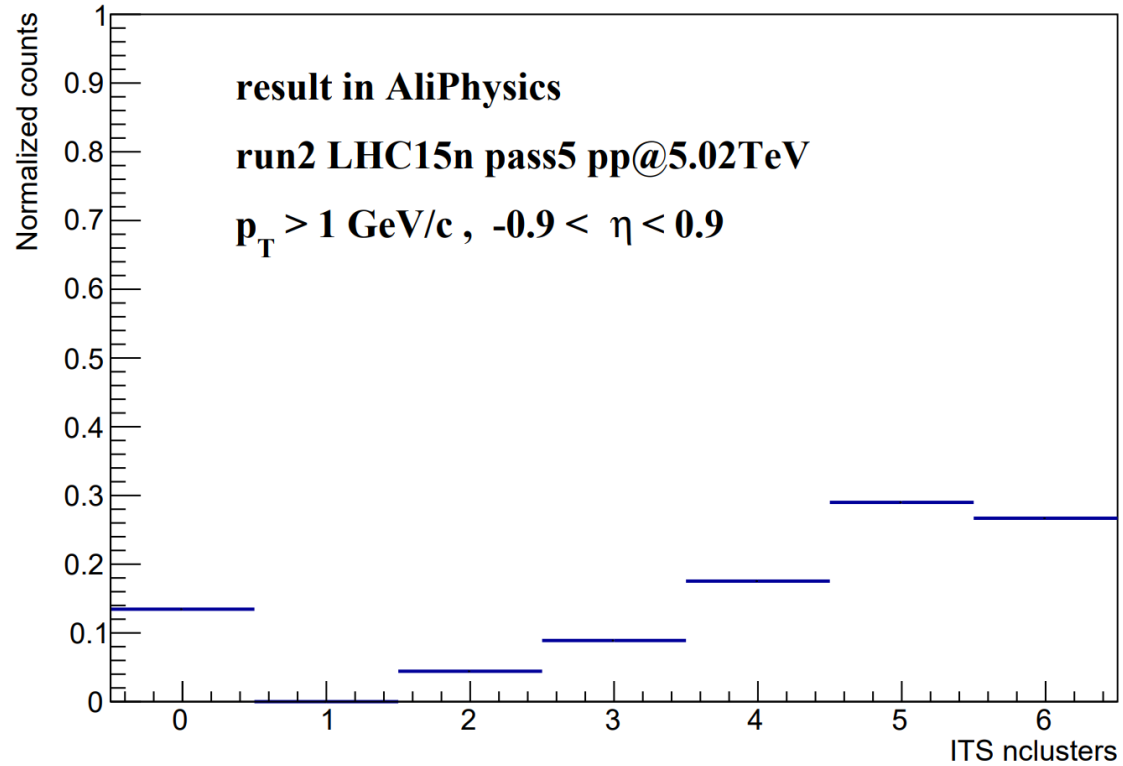
ITS cluster map



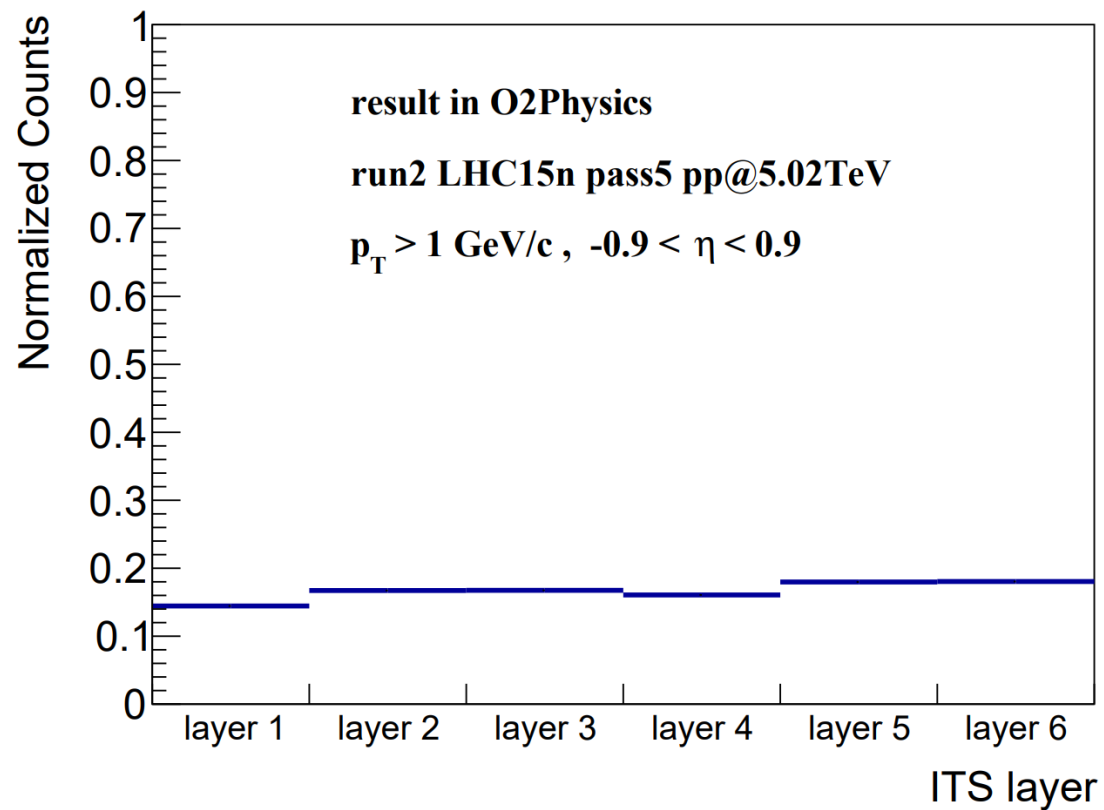
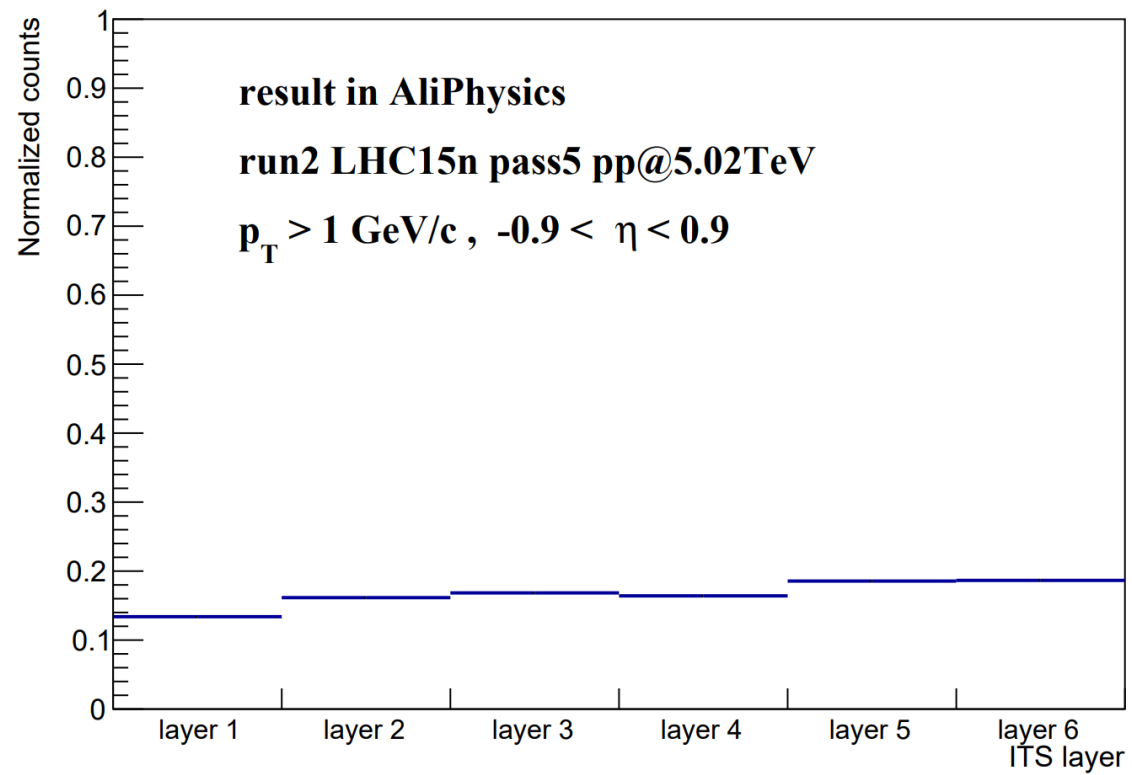
uint8_t(1) -> 0 0 0 0 0 0 0 1

e.g. Hit layer3:
 (ITSClusterMap & (uint8_t(1) << 2)) > 0

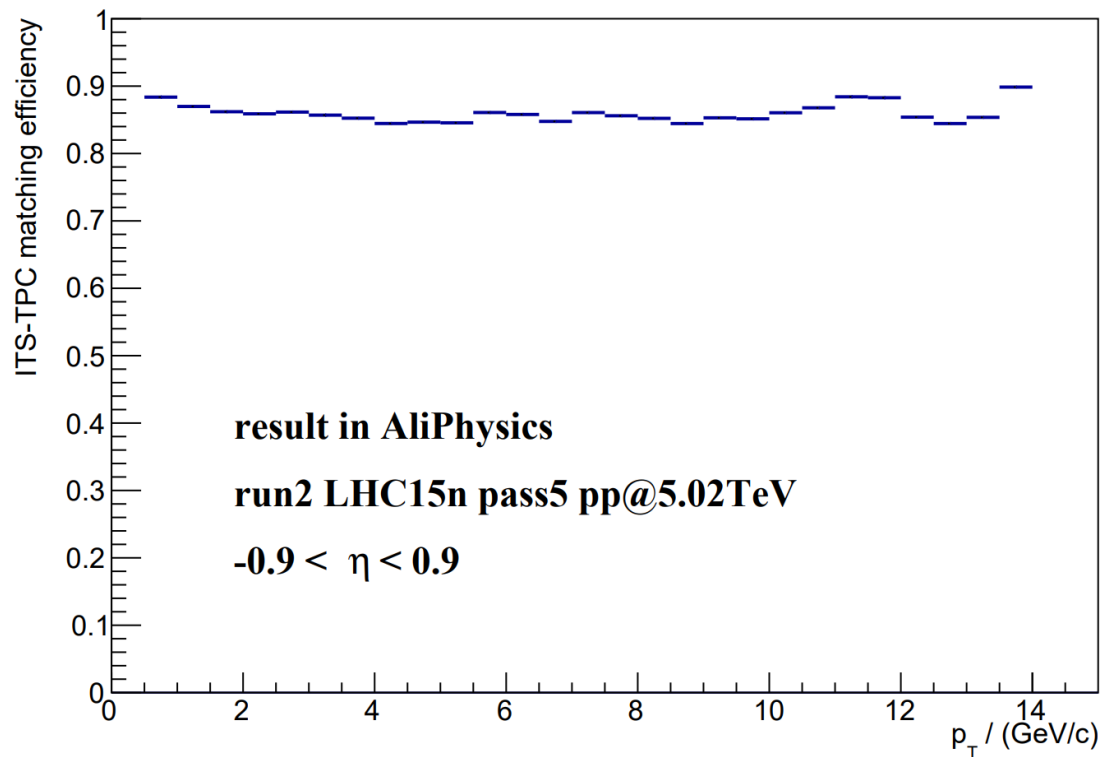
ITS performance



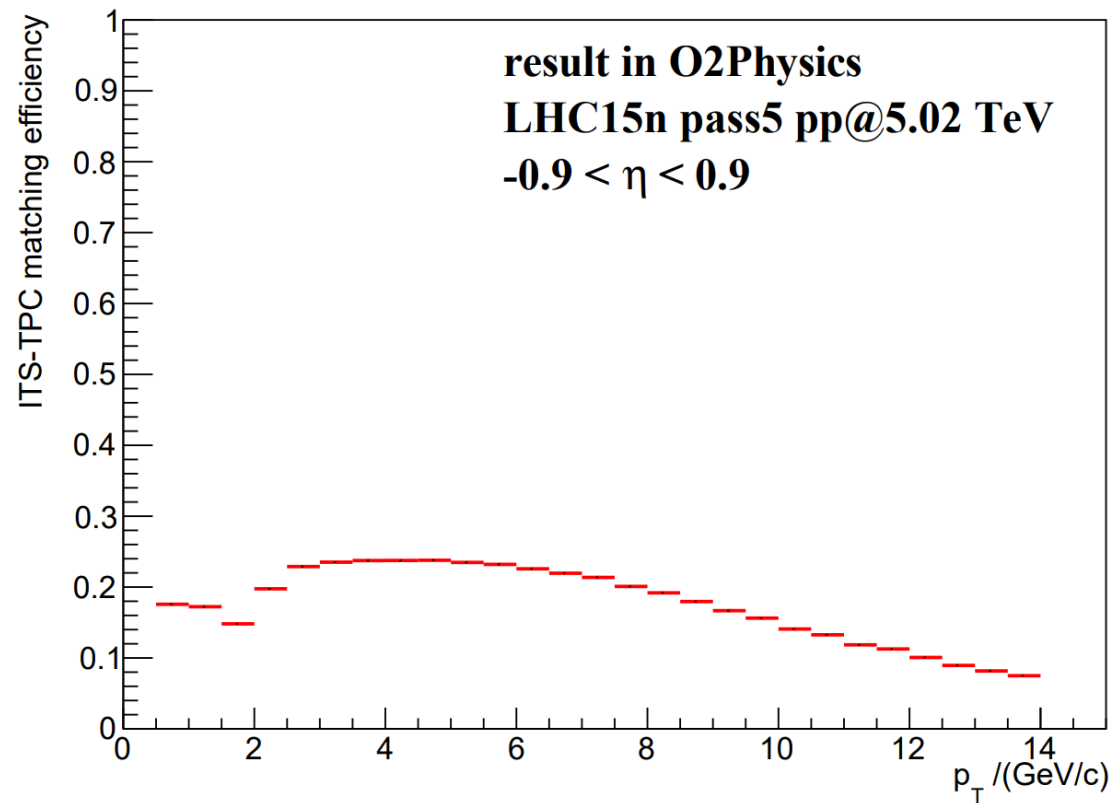
ITS performance



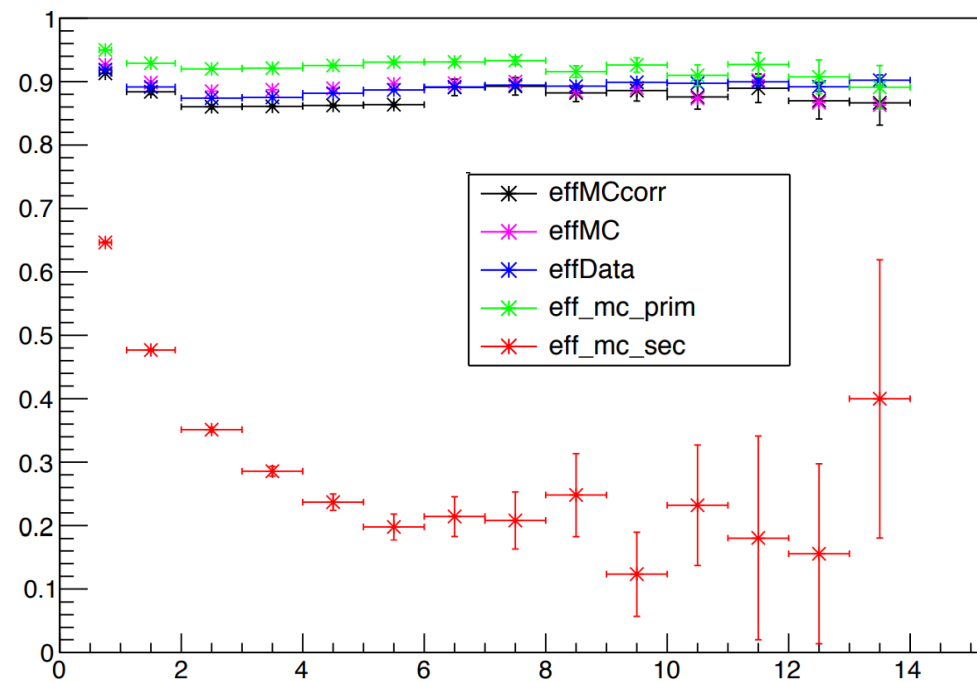
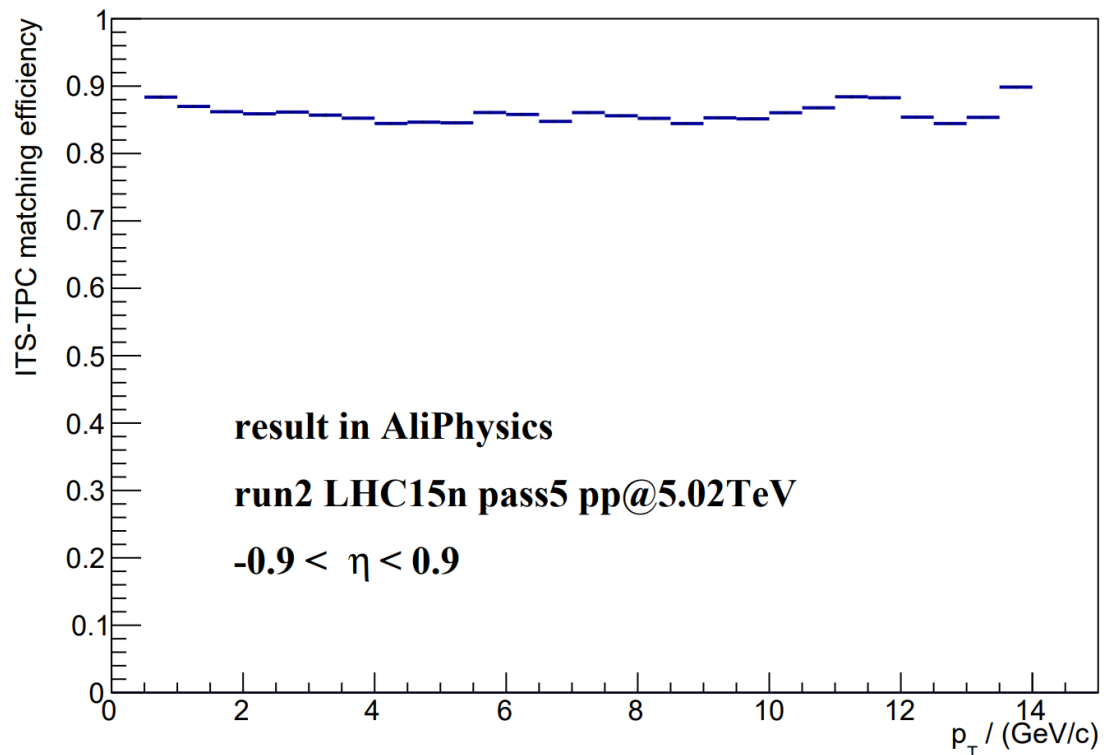
ITS-TPC matching efficiency



$$\varepsilon = \frac{\# \text{ tracks ITSTPC}}{\# \text{ tracks TPC}}$$



ITS-TPC matching efficiency



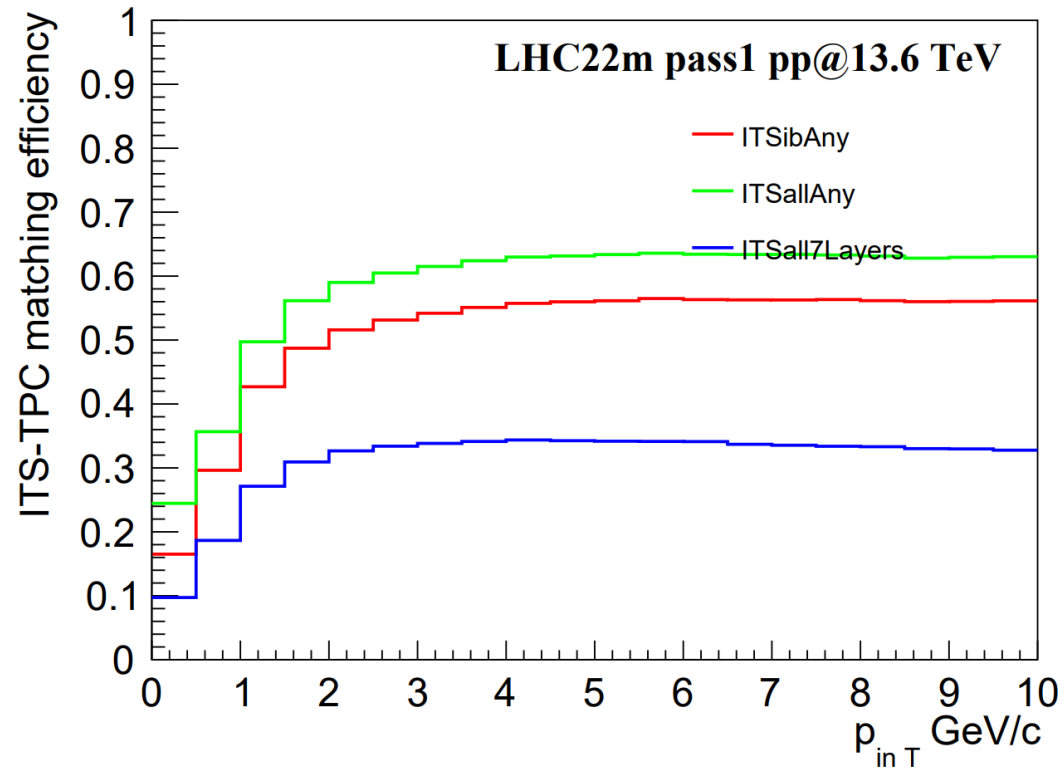
<https://twiki.cern.ch/twiki/bin/viewauth/ALICE/AlidPGtoolsTrackSystematicUncertaintyBookkeeping>

Summery

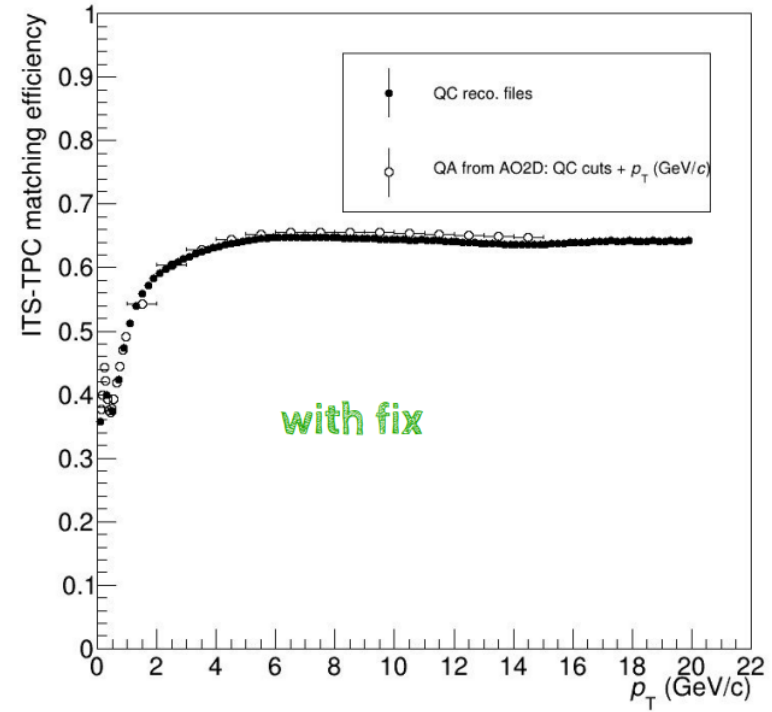
- By using Aliphysics, we get the same ITS-TPC matching efficiency of LHC15n with the published result.
- The ITS-TPC matching efficiency calculated by O2Physics the is extremely low compared with published result.

Back up

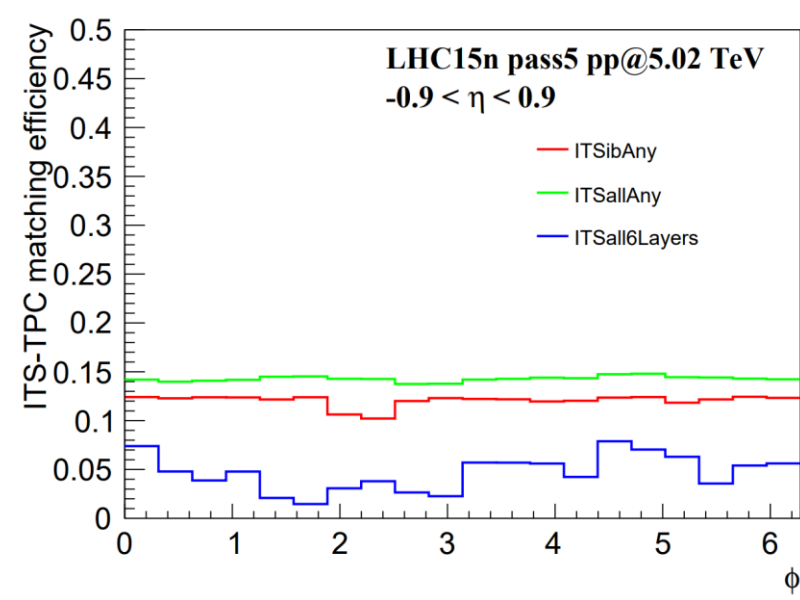
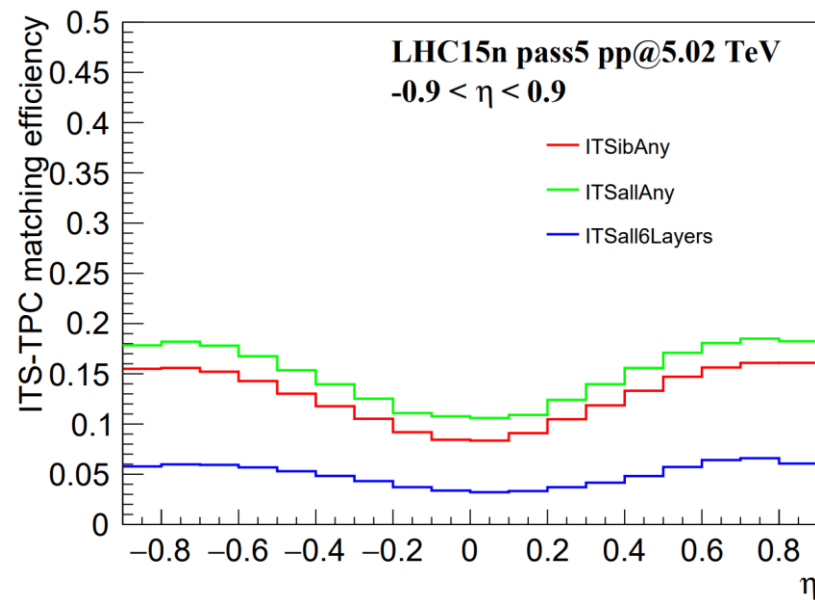
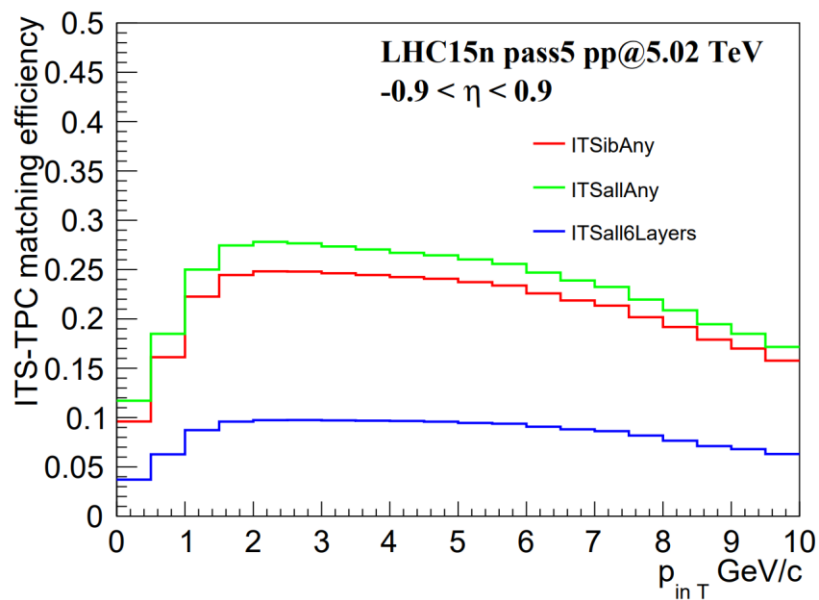
https://indico.cern.ch/event/1209260/contributions/5085267/attachments/2543429/4379484/2022Nov_DPG_AliceWeek.pdf



LHC22m run 523182



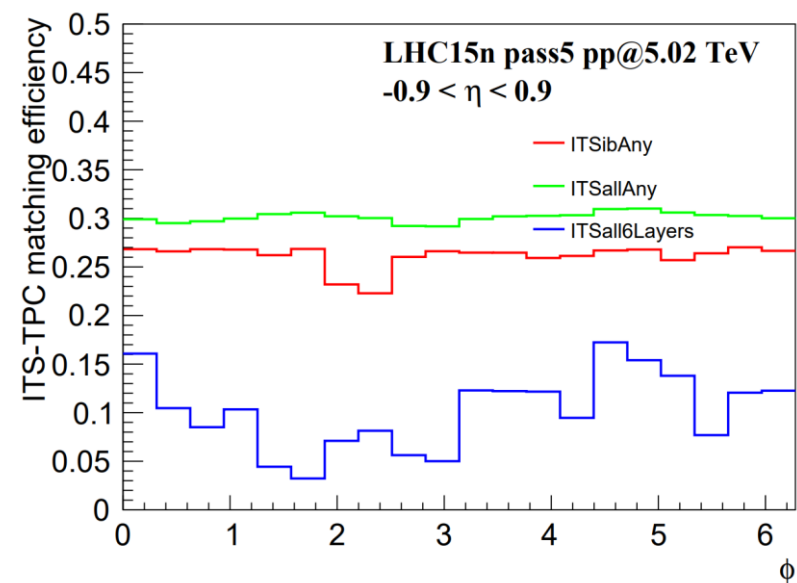
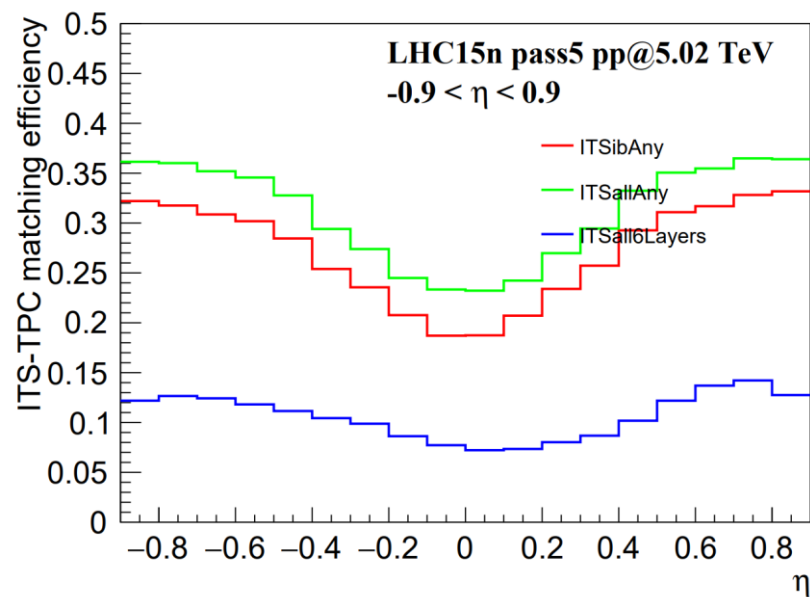
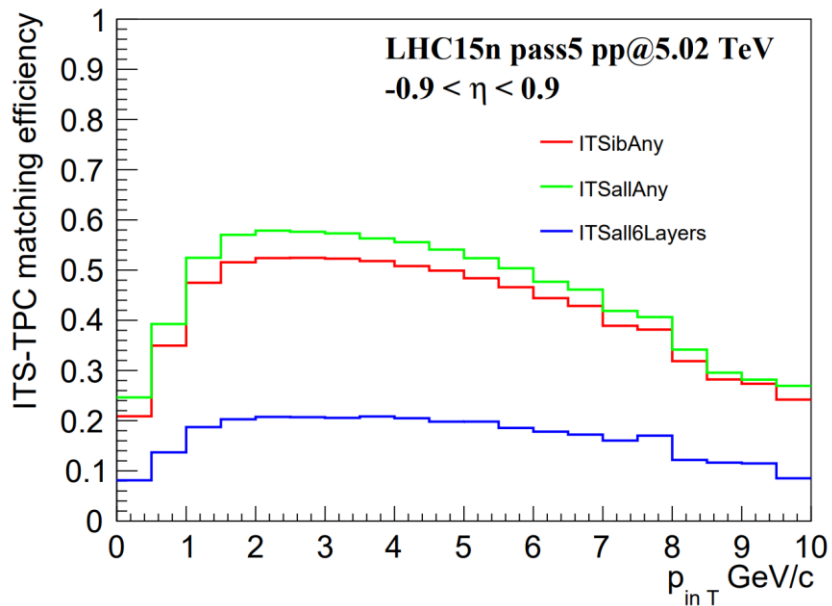
Back up



All runs

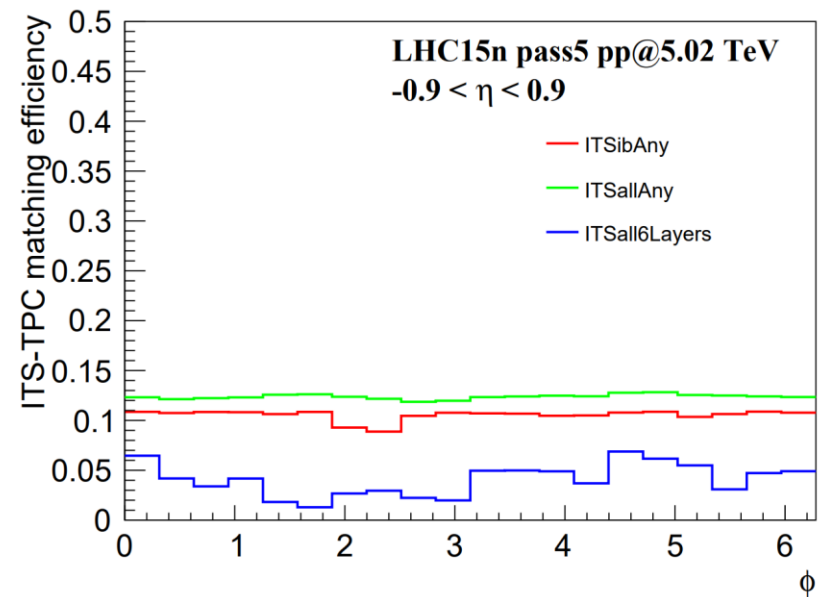
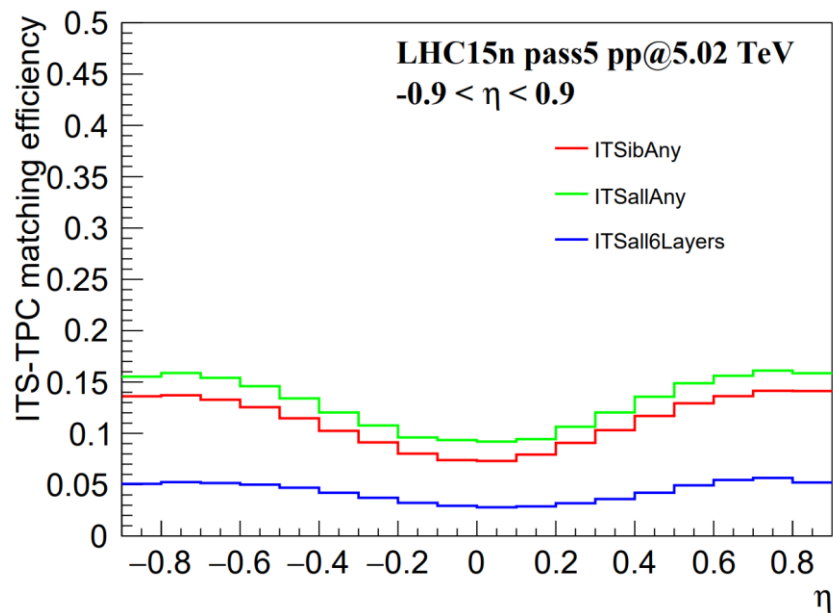
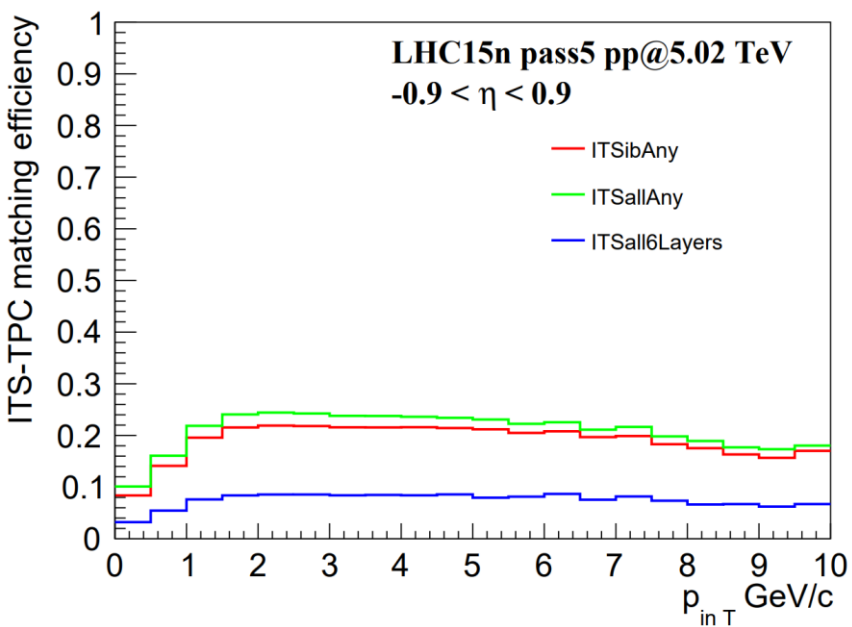
Back up

Low IR



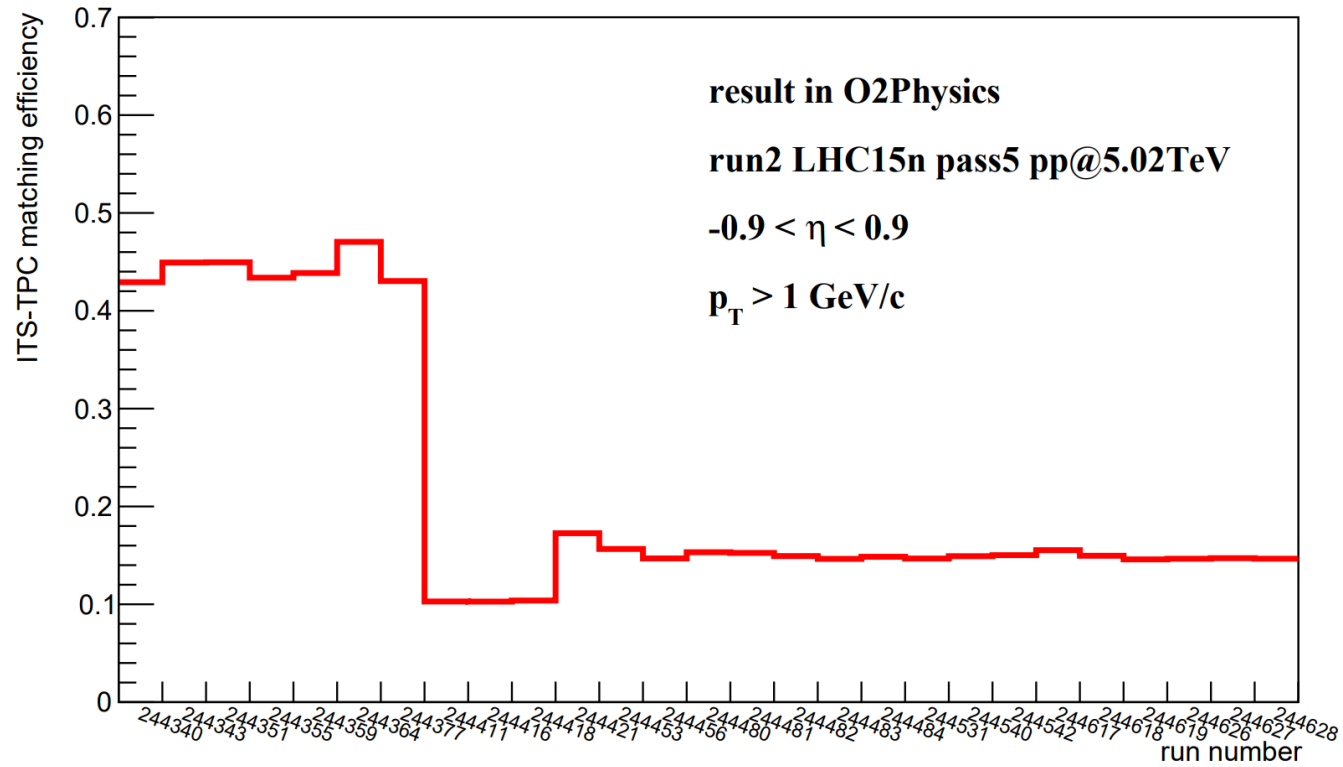
LowIR runs

Back up



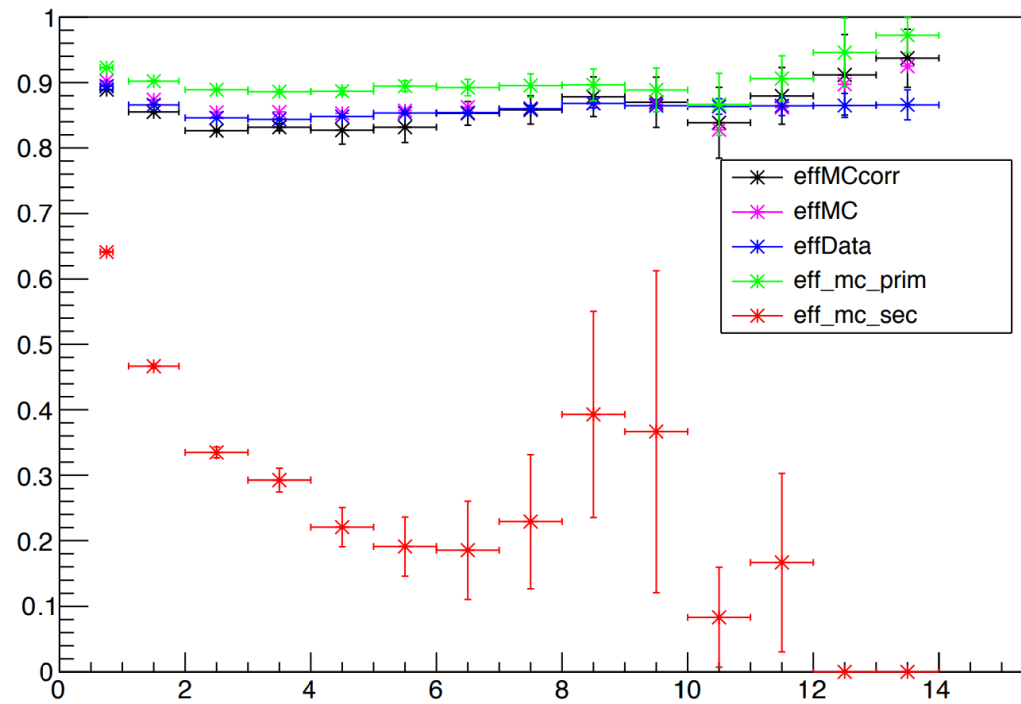
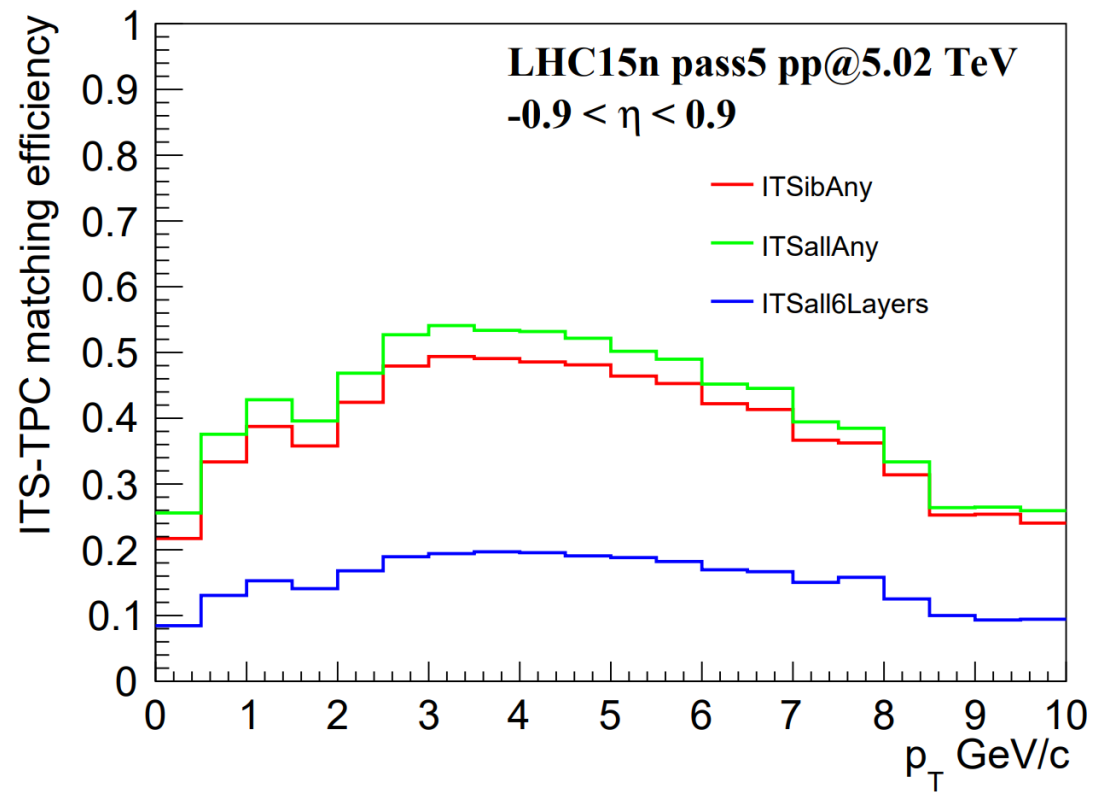
HighIR runs

ITS-TPC matching efficiency



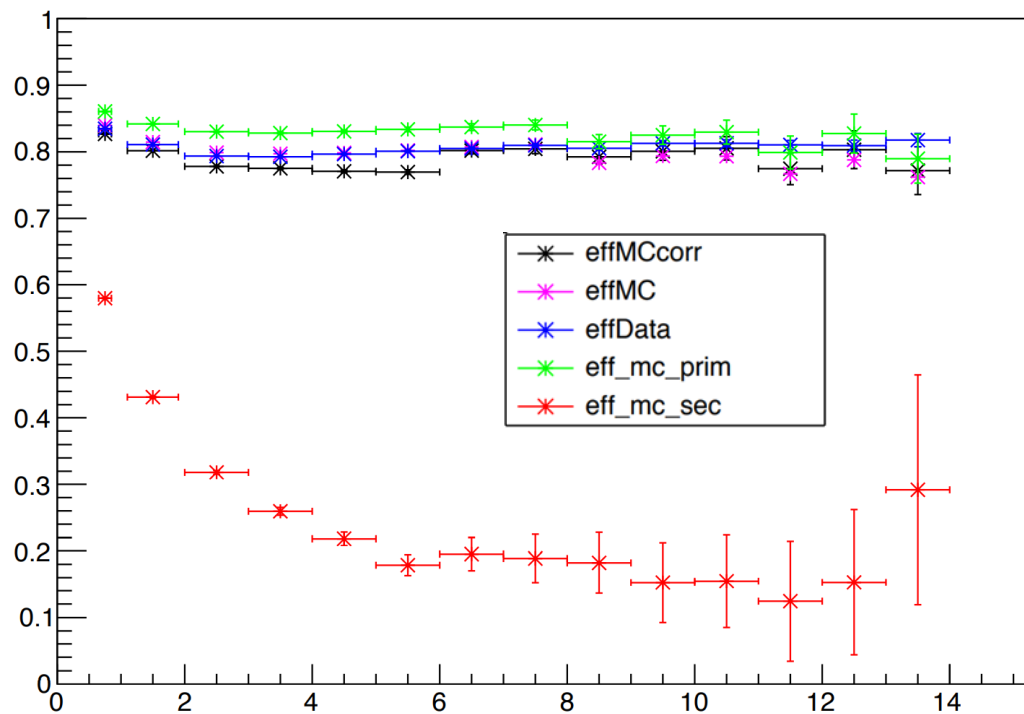
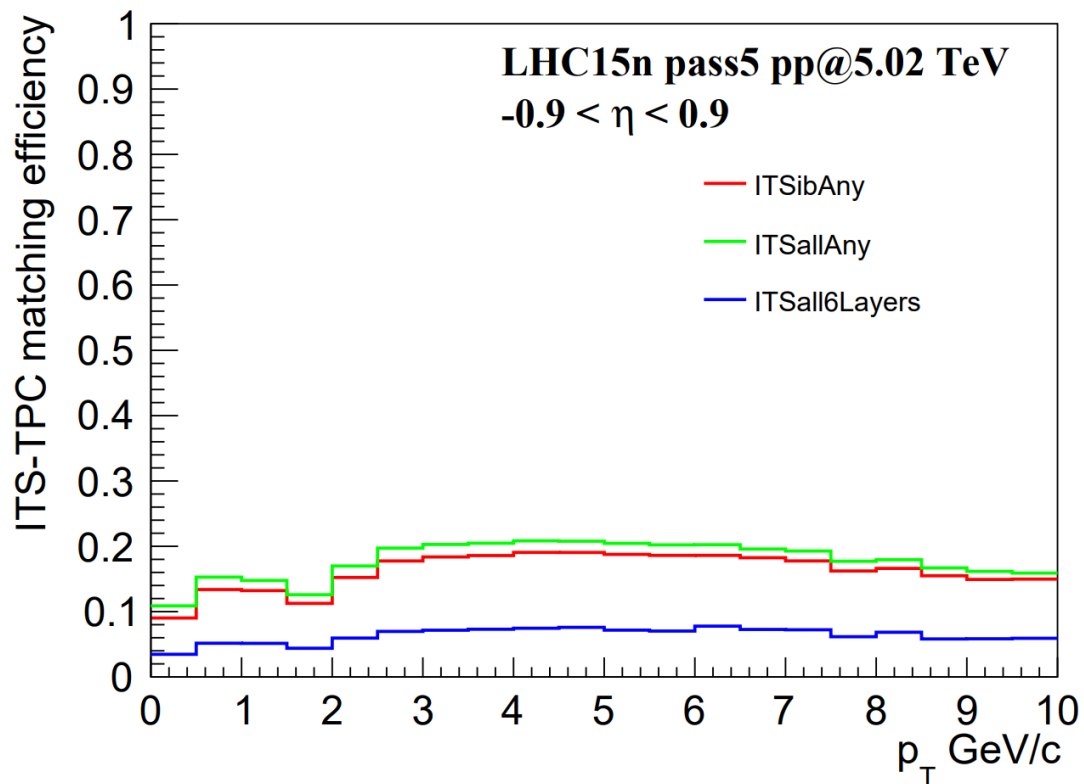
Low IR

data Runlist lowIR: **244340**,244343,244355,244359,244364,244377



High IR

data Runlist highIR: 244628, 244627, 244626, 244619, 244618, 244617, 244542, 244540, **244531**, 244484, 244483, **244482**, 244481, 244480, 244456, **244453**, 244421, 244418, 244416, 244411, 244351



Back up

