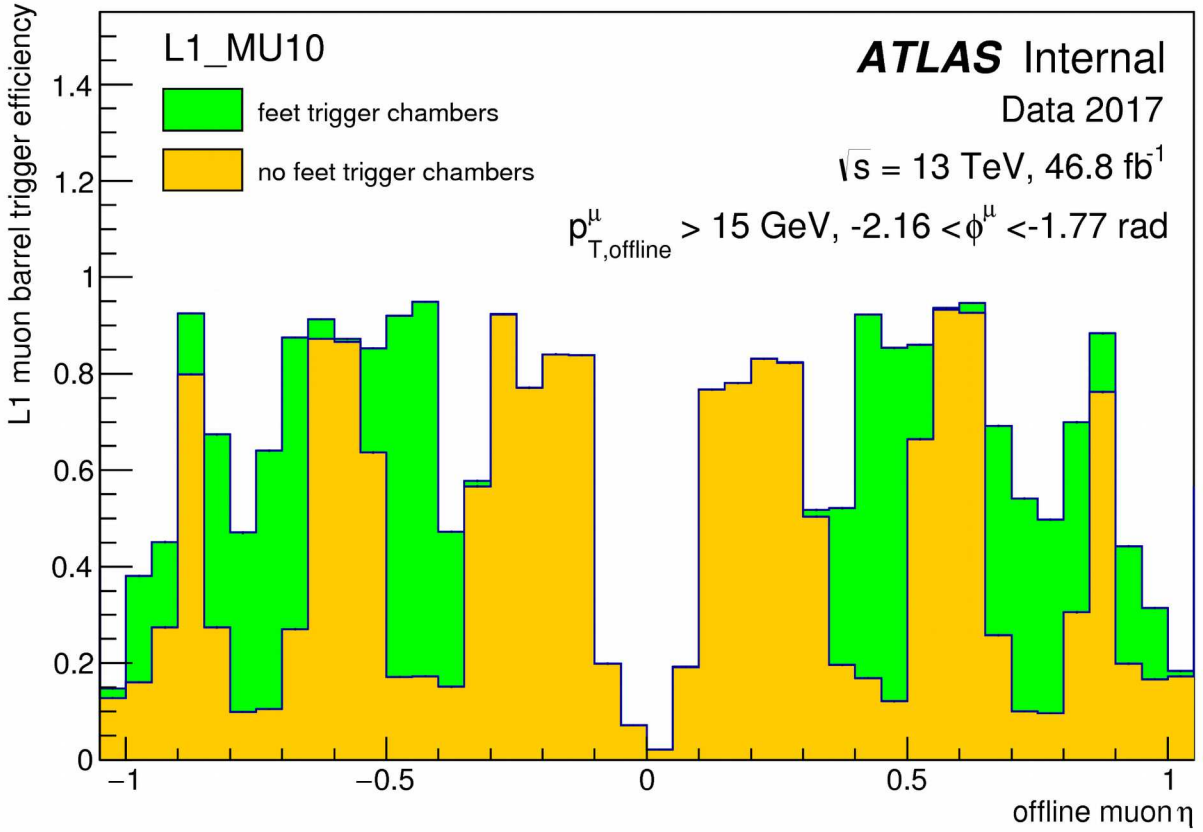
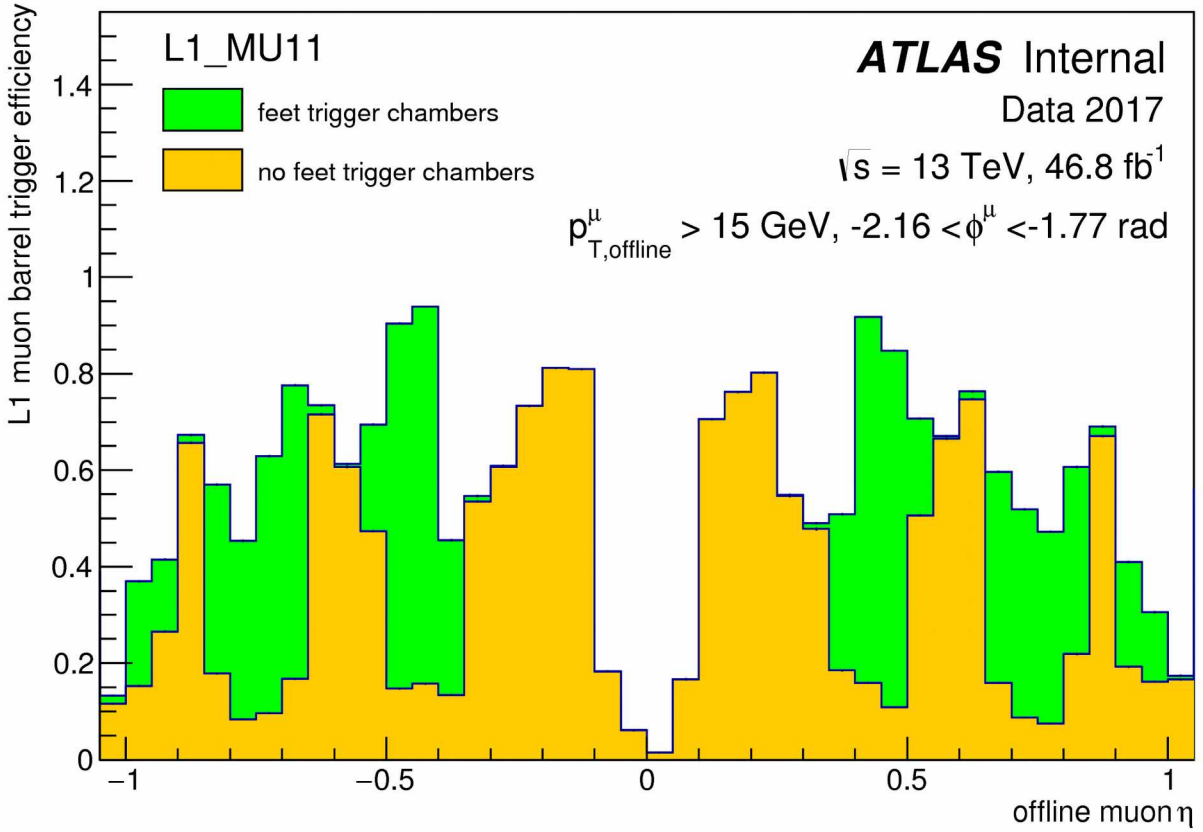
RPC trigger plots
to be approved

L1 MU10 Barrel muon trigger efficiency as a function of muon η in 2017 for Sector 12 in φ, w/ and w/o the "feet trigger chambers"



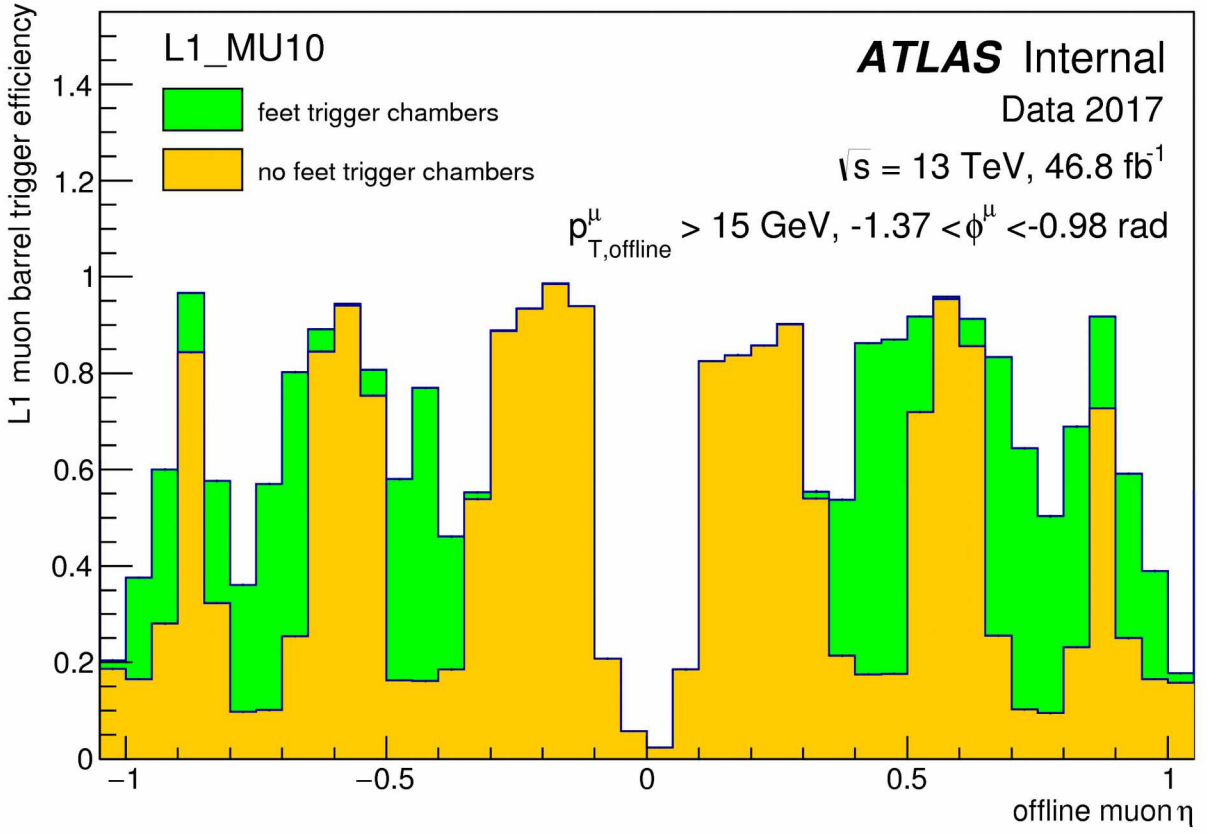
CAPTION: Efficiency of Level 1 MU10 trigger in 2017 including (in green) or excluding (yellow) the newly commissioned trigger chambers in the "feet" region of the ATLAS Muon Spectrometer. The efficiency is plotted as a function of η at the interaction vertex of offline muon candidates in the barrel detector region, for a specific sector (corresponding to -2.16 < φ(mu at the interaction vertex) < -1.77) of the "feet" region of the ATLAS Muon Spectrometer. The efficiency is computed with respect to offline isolated muon candidates which are reconstructed using standard ATLAS software and are required to pass a "Medium" quality requirement and have a transverse momentum of at least 15 GeV. The MU10 trigger requires that a candidate passed the 10 GeV threshold requirement of the Level 1 muon trigger system, using medium trigger chambers. The efficiency is measured on an inclusive sample selected using all non-muon Level 1 ATLAS triggers, in 13 TeV data from 2017 with 25 ns LHC bunch spacing. The plot shows the efficiency increase across the pseudo-rapidity range in the ATLAS Barrel Region, introduced by using the new trigger RPC chambers commissioned by the end of 2015 to cover the indicated φ range, corresponding to the detector support structure feet. The efficiency is also made more constant across η, instrumenting the positions where the detector structure support feet are placed.

L1 MU11 Barrel muon trigger efficiency as a function of muon η in 2017 for Sector 12 in φ, w/ and w/o the "feet trigger chambers"



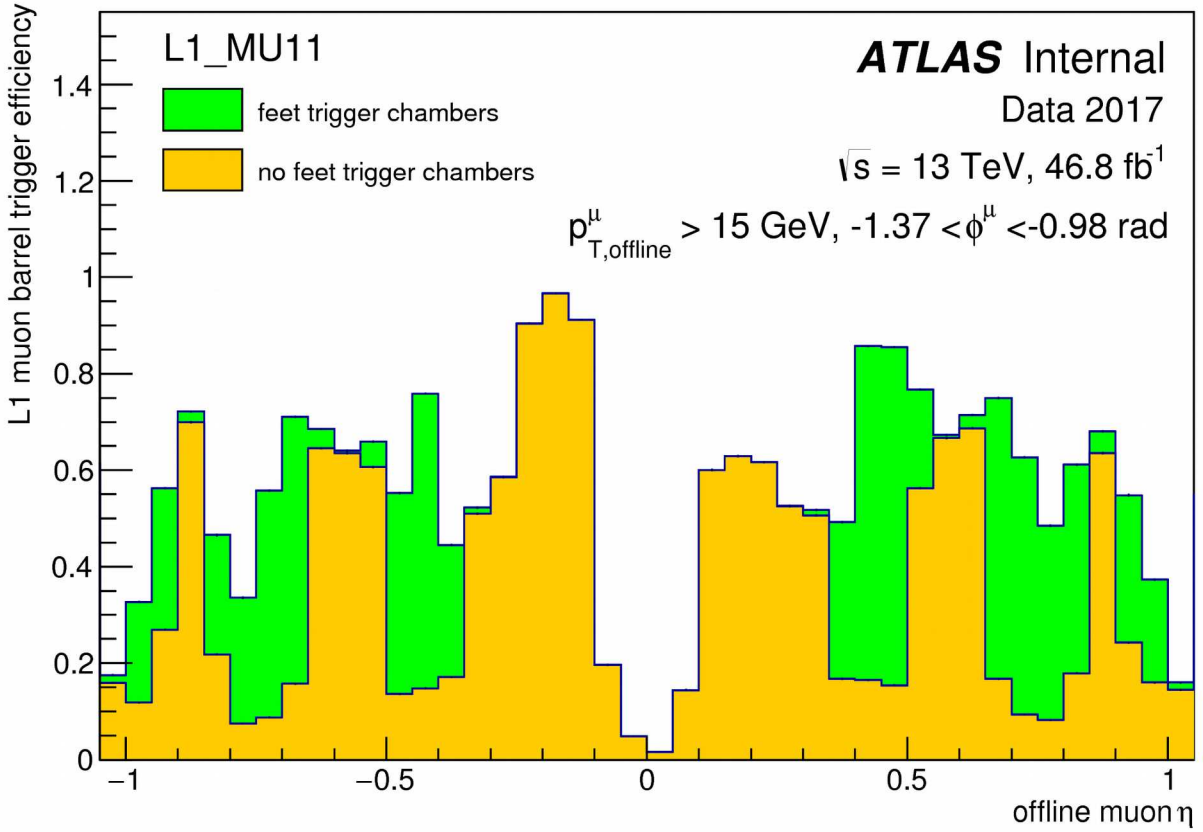
CAPTION: Efficiency of Level 1 MU11 trigger in 2017 including (in green) or excluding (yellow) the newly commissioned trigger chambers in the "feet" region of the ATLAS Muon Spectrometer. The efficiency is plotted as a function of η at the interaction vertex of offline muon candidates in the barrel detector region, for a specific sector (corresponding to -2.16 < φ(mu at the interaction vertex) < -1.77) of the "feet" region of the ATLAS Muon Spectrometer. The efficiency is computed with respect to offline isolated muon candidates which are reconstructed using standard ATLAS software and are required to pass a "Medium" quality requirement and have a transverse momentum of at least 15 GeV. The MU11 trigger requires that a candidate passed the 10 GeV threshold requirement of the Low-p_T Level 1 muon trigger system, with a coincidence with a High-p_T RPC chamber. The efficiency is measured on an inclusive sample selected using all non-muon Level 1 ATLAS triggers, in 13 TeV data from 2017 with 25 ns LHC bunch spacing. The plot shows the efficiency increase across the pseudo-rapidity range in the ATLAS Barrel Region, introduced by using the new trigger RPC chambers commissioned by the end of 2015 to cover the indicated φ range, corresponding to the detector support structure feet. The efficiency is also made more constant across η, instrumenting the positions where the detector structure support feet are placed.

L1 MU10 Barrel muon trigger efficiency as a function of muon η in 2017 for Sector 14 in φ, w/ and w/o the "feet trigger chambers"



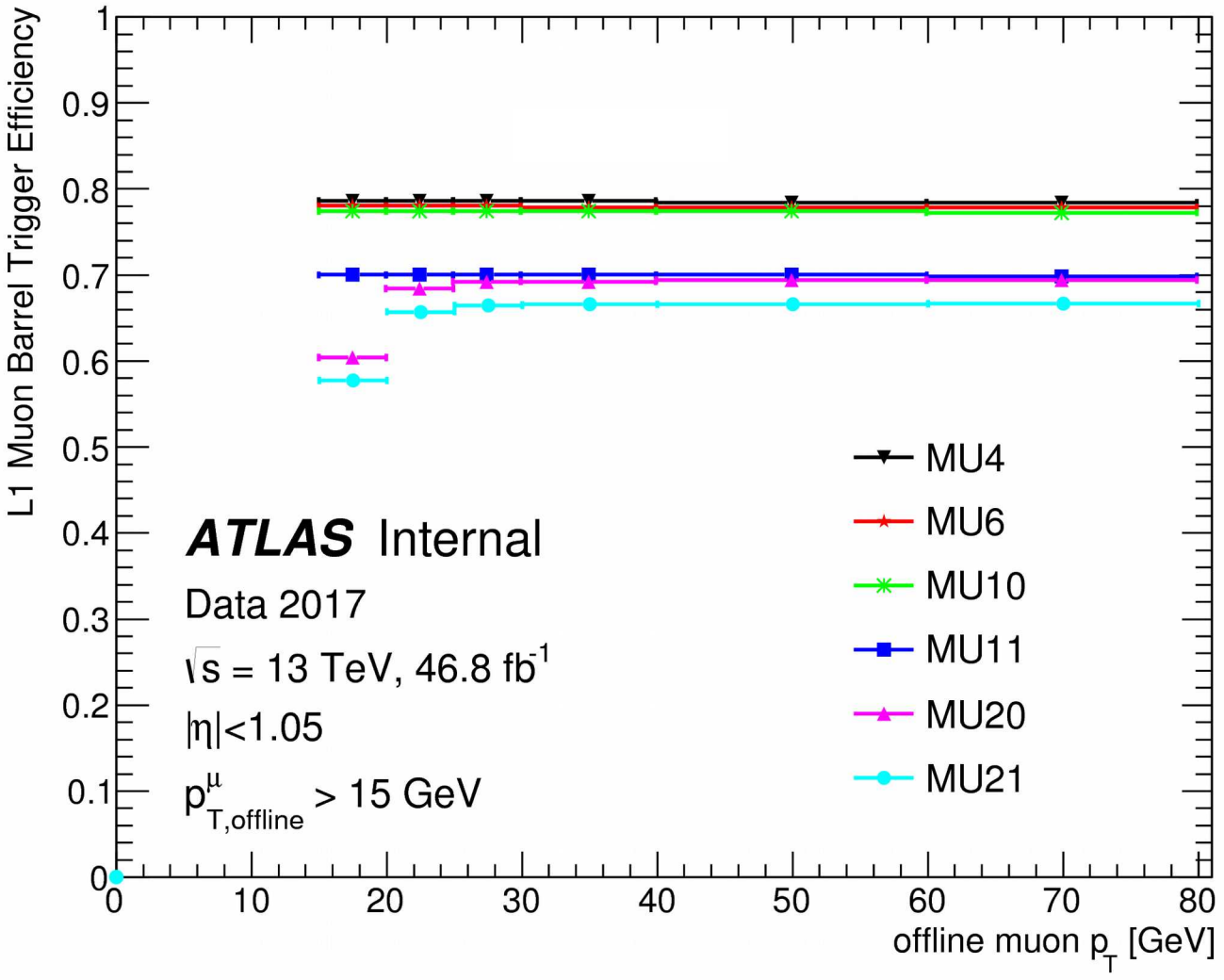
CAPTION: Efficiency of Level 1 MU10 trigger in 2017 including (in green) or excluding (yellow) the newly commissioned trigger chambers in the "feet" region of the ATLAS Muon Spectrometer. The efficiency is plotted as a function of η at the interaction vertex of offline muon candidates in the barrel detector region, for a specific sector (corresponding to -1.37 < φ(mu at the interaction vertex) < -0.98) of the "feet" region of the ATLAS Muon Spectrometer. The efficiency is computed with respect to offline isolated muon candidates which are reconstructed using standard ATLAS software and are required to pass a "Medium" quality requirement and have a transverse momentum of at least 15 GeV. The MU10 trigger requires that a candidate passed the 10 GeV threshold requirement of the Level 1 muon trigger system, using medium trigger chambers. The efficiency is measured on an inclusive sample selected using all non-muon Level 1 ATLAS triggers, in 13 TeV data from 2017 with 25 ns LHC bunch spacing. The plot shows the efficiency increase across the pseudo-rapidity range in the ATLAS Barrel Region, introduced by using the new trigger RPC chambers commissioned by the end of 2015 to cover the indicated φ range, corresponding to the detector support structure feet. The efficiency is also made more constant across η, instrumenting the positions where the detector structure support feet are placed.

L1 MU11 Barrel muon trigger efficiency as a function of muon η in 2017 for Sector 14 in φ, w/ and w/o the "feet trigger chambers"



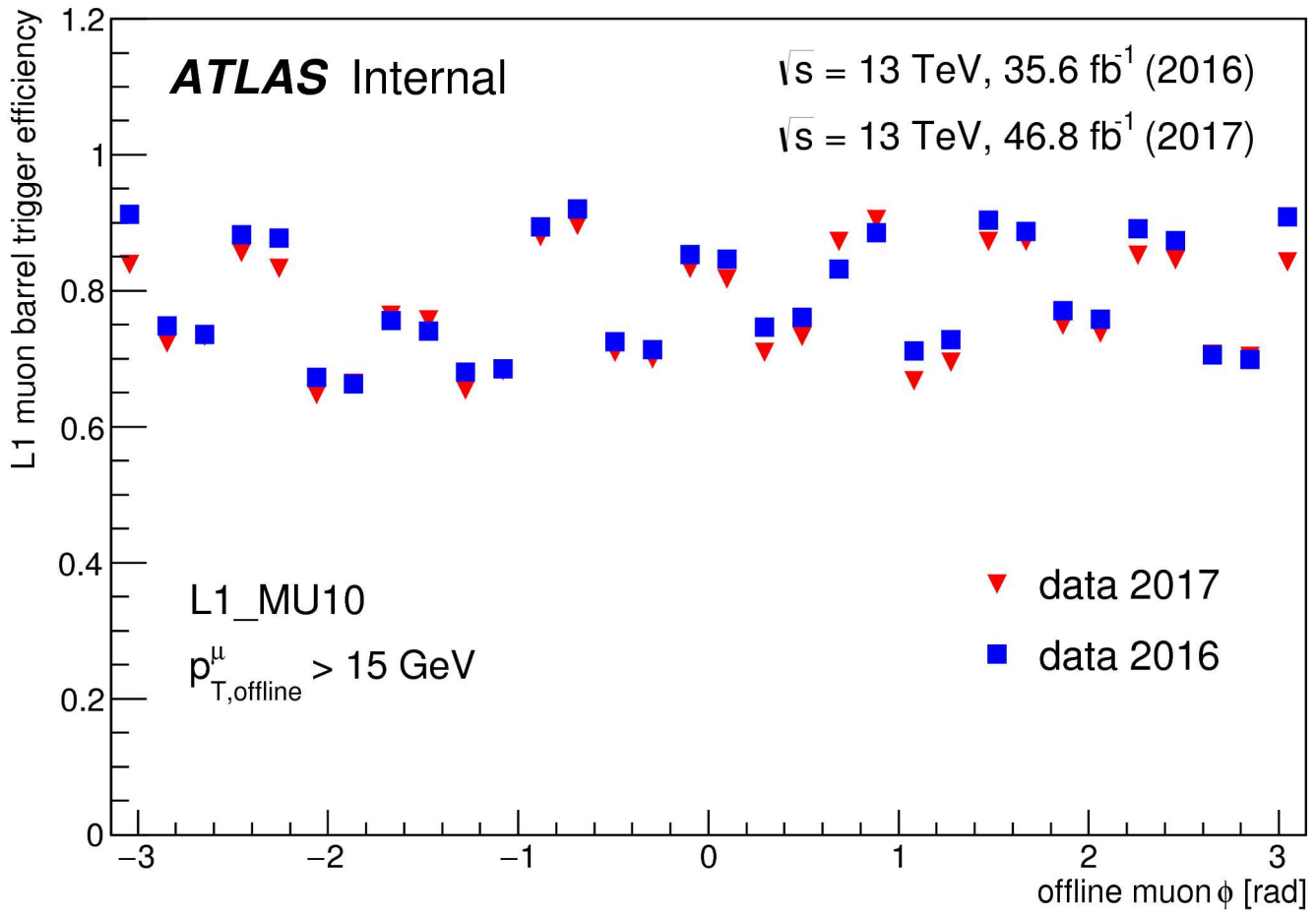
CAPTION: Efficiency of Level 1 MU11 trigger in 2017 including (in green) or excluding (yellow) the newly commissioned trigger chambers in the "feet" region of the ATLAS Muon Spectrometer. The efficiency is plotted as a function of η at the interaction vertex of offline muon candidates in the barrel detector region, for a specific sector (corresponding to -1.37 < φ(mu at the interaction vertex) < -0.98) of the "feet" region of the ATLAS Muon Spectrometer. The efficiency is computed with respect to offline isolated muon candidates which are reconstructed using standard ATLAS software and are required to pass a "Medium" quality requirement and have a transverse momentum of at least 15 GeV. The MU11 trigger requires that a candidate passed the 10 GeV threshold requirement of the Low-p_T Level 1 muon trigger system, with a coincidence with a High-p_T RPC chamber. The efficiency is measured on an inclusive sample selected using all non-muon Level 1 ATLAS triggers, in 13 TeV data from 2017 with 25 ns LHC bunch spacing. The plot shows the efficiency increase across the pseudo-rapidity range in the ATLAS Barrel Region, introduced by using the new trigger RPC chambers commissioned by the end of 2015 to cover the indicated φ range, corresponding to the detector support structure feet. The efficiency is also made more constant across η, instrumenting the positions where the detector structure support feet are placed.

L1 Barrel muon trigger efficiency as a function of muon p_T with 2017 data



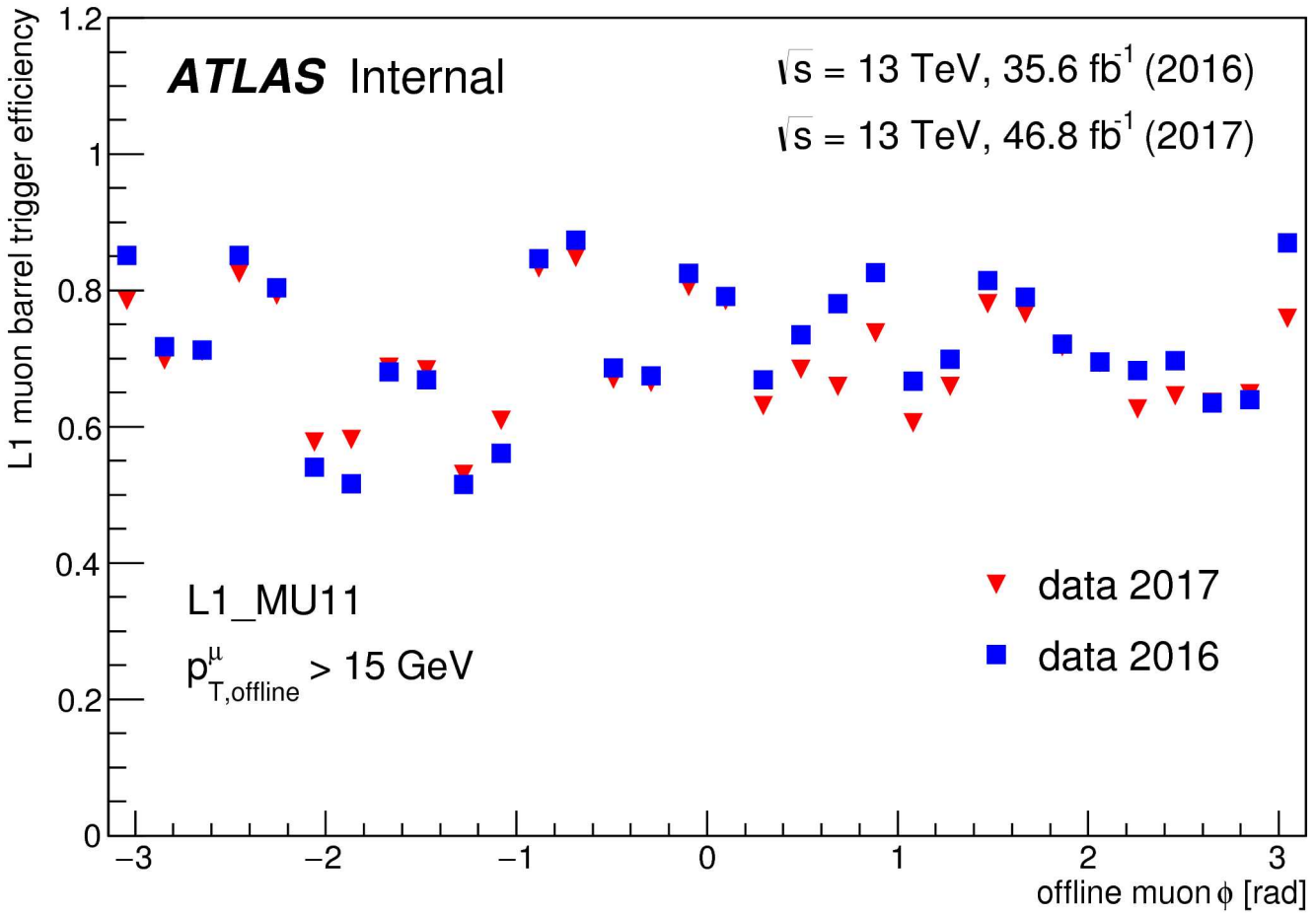
CAPTION: Level 1 muon barrel trigger efficiency for reconstructed muons with p_T > 15 GeV and |η| < 1.05 as a function of transverse momentum. The efficiency is shown for the six Level-1 thresholds: MU4, MU6, MU10 which require a coincidence of the two inner RPC stations, and MU11, MU20, MU21 with a further coincidence on the outer RPC stations. MU21 threshold is equal to MU20 everywhere but in the "feet" region, where the new feet trigger does not have this threshold. The efficiency is measured using events selected by independent triggers.

L1 Barrel muon trigger efficiency as a function of the azimuthal coordinate φ with 2016 and 2017 data for the trigger threshold MU10



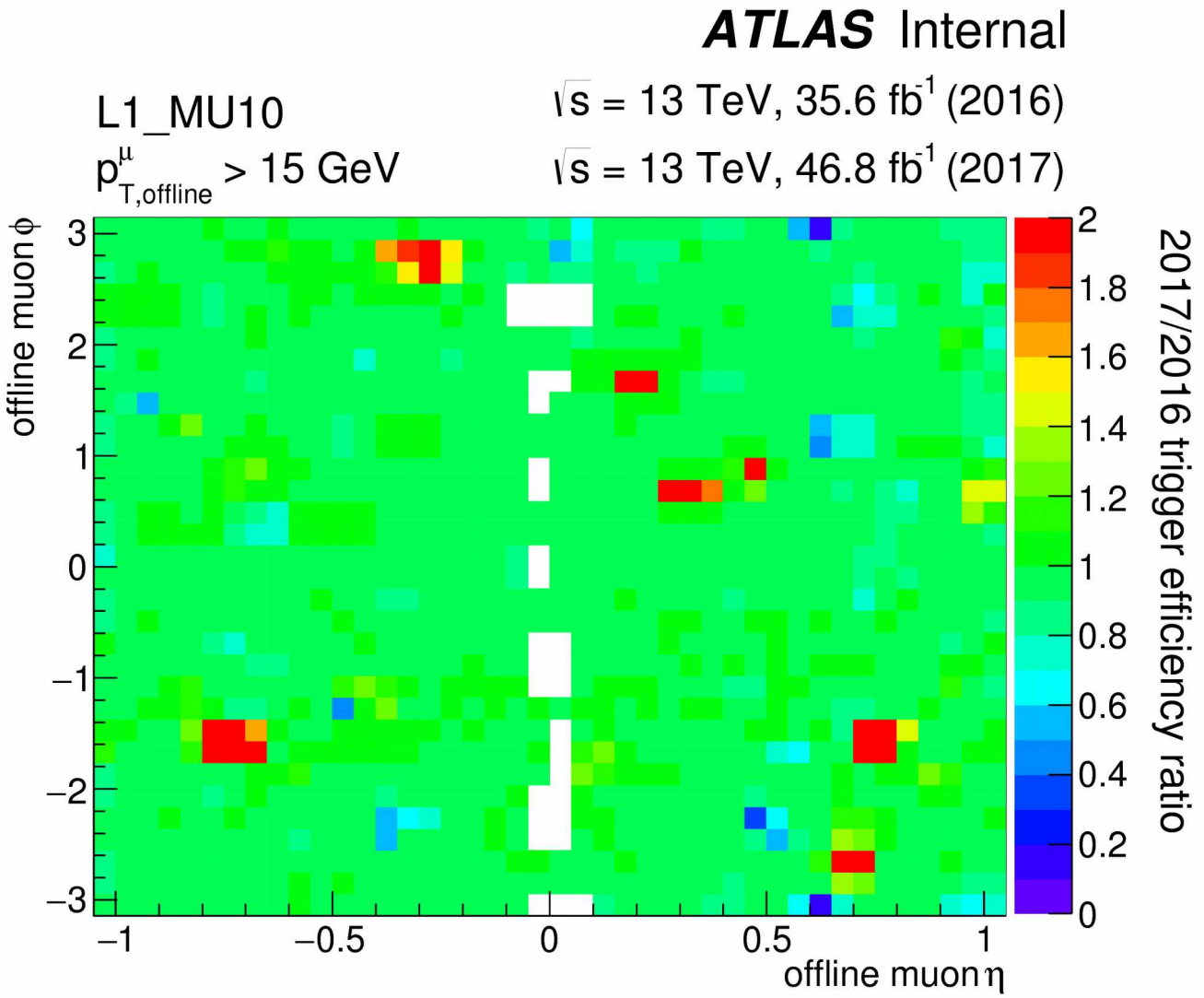
CAPTION: Efficiency of Level 1 MU10 trigger in 2017 and comparison with 2016 trigger efficiency. The efficiency is plotted as a function of φ at the interaction vertex of offline muon candidates in the barrel detector region. The efficiency is computed with respect to offline isolated muon candidates which are reconstructed using standard ATLAS software and are required to pass a "Medium" quality requirement and have a transverse momentum of at least 15 GeV. The MU10 trigger requires that a candidate passed the 10 GeV threshold requirement of the L1 muon trigger system, using medium trigger chambers. The efficiency is measured on an inclusive sample selected using all non-muon L1 ATLAS triggers, in 13 TeV data from 2017 with 25 ns LHC bunch spacing.

L1 Barrel muon trigger efficiency as a function of the azimuthal coordinate φ with 2016 and 2017 data for the trigger threshold MU11



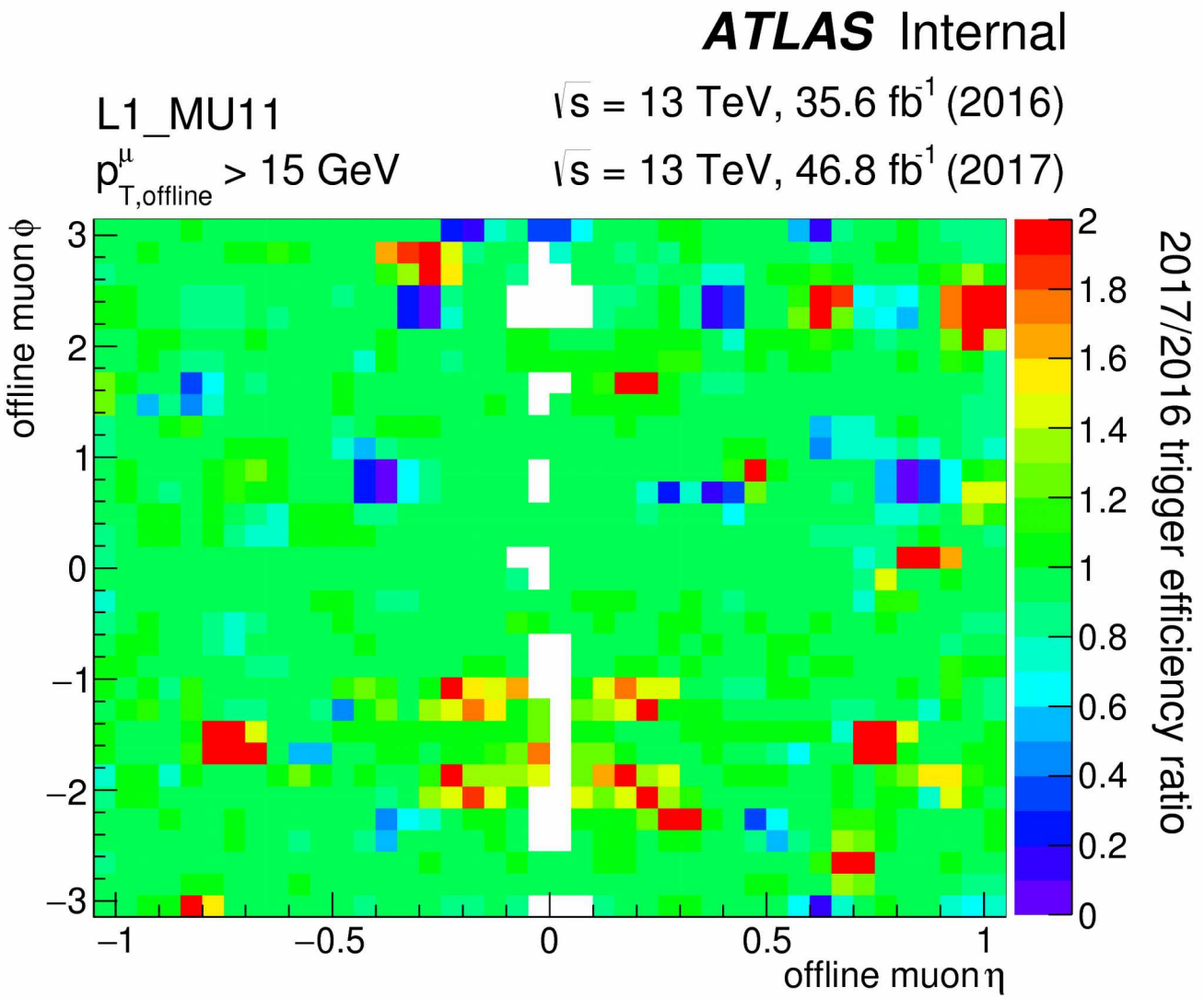
CAPTION: Efficiency of Level 1 MU11 trigger in 2017 and comparison with 2016 trigger efficiency. The efficiency is plotted as a function of φ at the interaction vertex of offline muon candidates in the barrel detector region. The efficiency is computed with respect to offline isolated muon candidates which are reconstructed using standard ATLAS software and are required to pass a "Medium" quality requirement and have a transverse momentum of at least 15 GeV. The MU11 trigger requires that a candidate passed the 10 GeV threshold requirement of the Low-p_T L1 muon trigger system, with a coincidence with a High-p_T RPC chamber. The efficiency is measured on an inclusive sample selected using all non-muon L1 ATLAS triggers, in 13 TeV data from 2017 with 25 ns LHC bunch spacing.

η-φ map of the ratio between the L1 Barrel muon trigger efficiency in 2017 and 2016 for the trigger threshold MU10



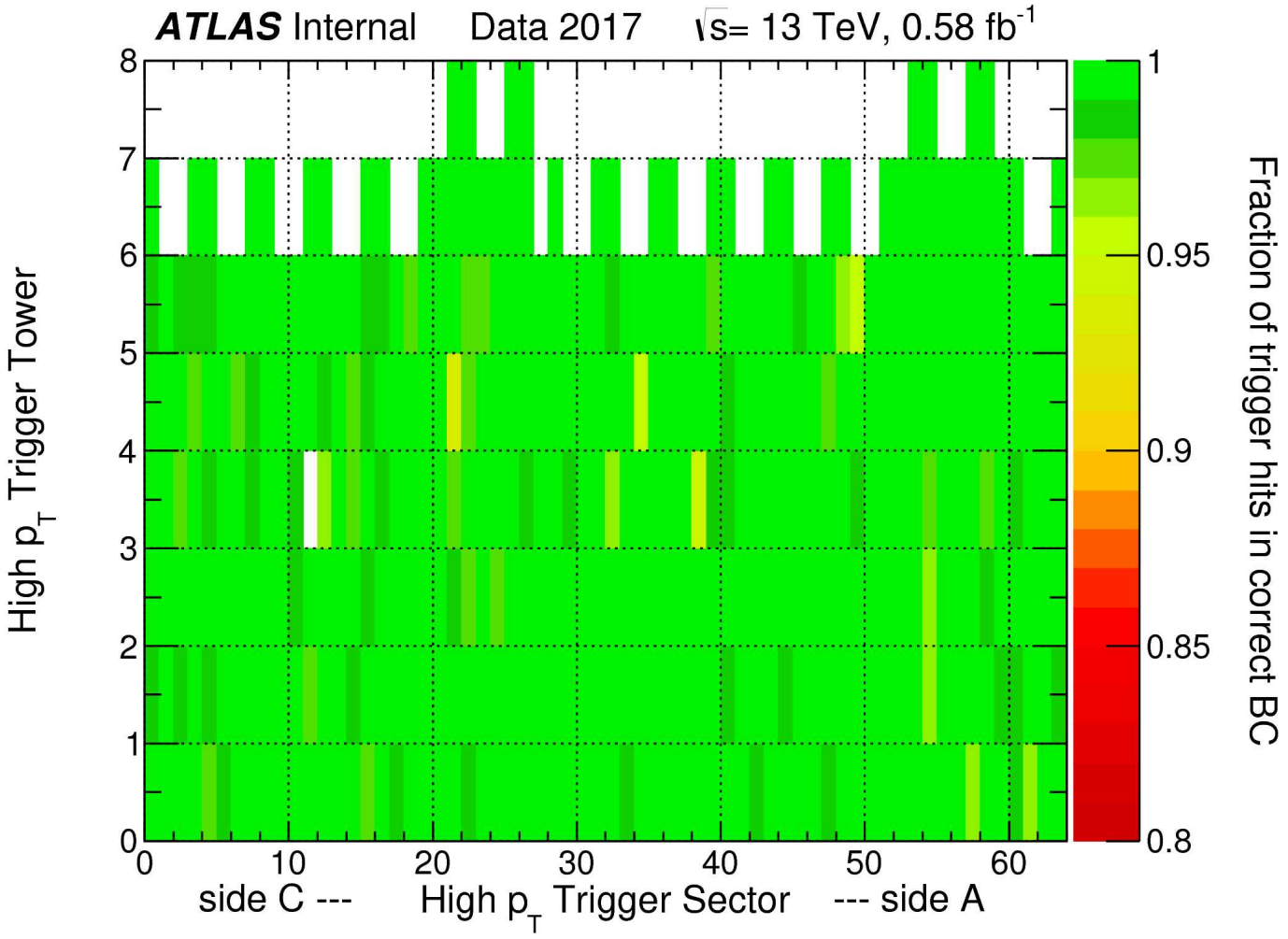
CAPTION: η-φ map of the ratio between the Level 1 Barrel muon trigger efficiency in 2017 and 2016 for the trigger threshold MU10. The efficiency is computed with respect to offline isolated muon candidates which are reconstructed using standard ATLAS software and are required to pass a "Medium" quality requirement and have a transverse momentum of at least 15 GeV. The MU10 trigger requires that a candidate passed the 10 GeV threshold requirement of the L1 muon trigger system, using medium trigger chambers. The efficiency is measured on an inclusive sample selected using all non-muon L1 ATLAS triggers, in 13 TeV data from 2017 with 25 ns LHC bunch spacing.

η-φ map of the ratio between the L1 Barrel muon trigger efficiency in 2017 and 2016 for the trigger threshold MU11



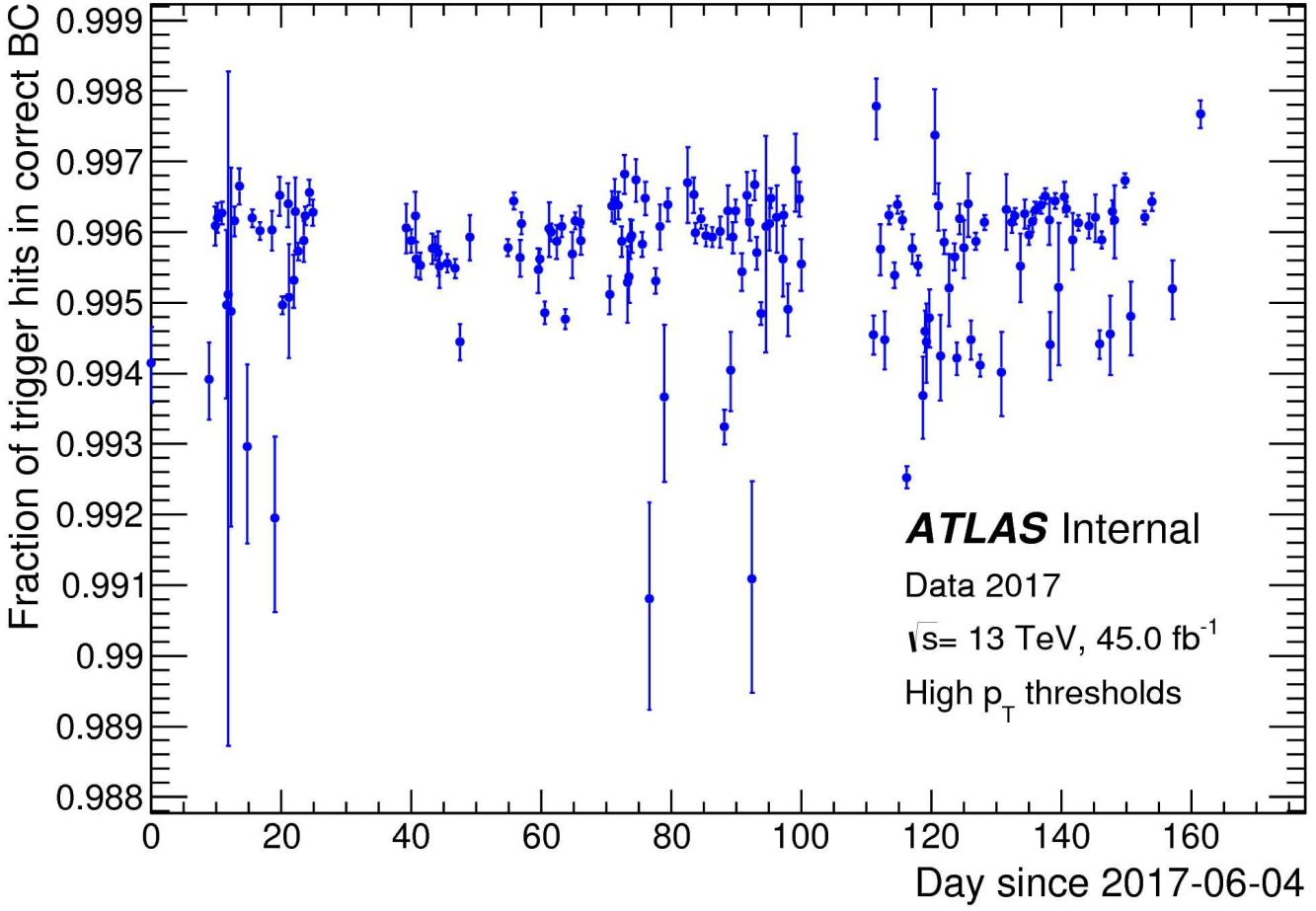
CAPTION: η-φ map of the ratio between the Level 1 Barrel muon trigger efficiency in 2017 and 2016 for the trigger threshold MU11. The efficiency is computed with respect to offline isolated muon candidates which are reconstructed using standard ATLAS software and are required to pass a "Medium" quality requirement and have a transverse momentum of at least 15 GeV. The MU11 trigger requires that a candidate passed the 10 GeV threshold requirement of the Low-p_T Level 1 muon trigger system, with a coincidence with a High-p_T RPC chamber. The efficiency is measured on an inclusive sample selected using all non-muon L1 ATLAS triggers, in 13 TeV data from 2017 with 25 ns LHC bunch spacing.

Fraction of the RPC high p_T trigger hits associated correctly to the collision Bunch Crossing for each RPC trigger tower



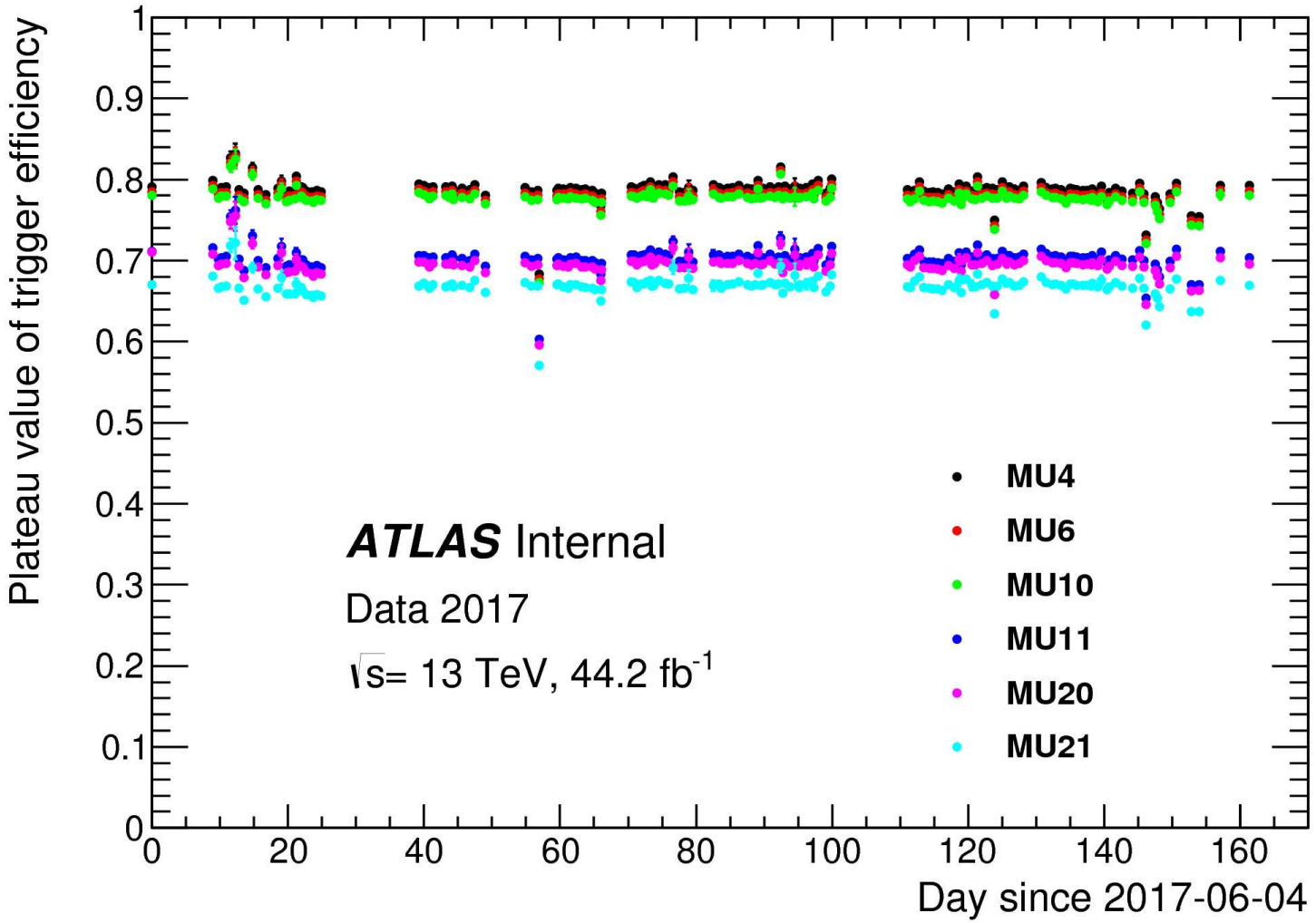
CAPTION: Fraction of the RPC high p_T trigger hits associated correctly to the collision Bunch Crossing for each Level 1 Barrel Muon trigger tower. Data from one of the pp runs at $\sqrt{s}$ = 13 TeV with an integrated luminosity L=0.58 pb^{-1}.

Fraction of the RPC high p_T trigger hits associated correctly to the collision Bunch Crossing for the whole RPC trigger system



CAPTION: Fraction of RPC high p_T trigger hits associated correctly to the collision Bunch Crossing for the whole RPC trigger system as a function of time. Each point corresponds to a different ATLAS run recorded in 2017. Only runs with integrated luminosity greater than 50 pb^{-1} have been used.

Plateau value of the L1 Barrel muon trigger efficiency as a function of the muon p_T for many runs in 2017 dataset



CAPTION: Plateau value of the Level 1 muon barrel trigger efficiency (as a function of muon p_T) for reconstructed muons with p_T > 15 GeV and $|\eta|$ < 1.05 as a function of time. Each point corresponds to a different ATLAS run recorded in 2017. Only runs with integrated luminosity greater than 50 pb^{-1} and a minimum number of reconstructed muons have been used. The efficiency is shown for the six Level-1 thresholds: MU4, MU6, MU10 which require a coincidence of the two inner RPC stations, and MU11, MU20, MU21 with a further coincidence on the outer RPC stations. MU21 threshold is equal to MU20 everywhere but in the "feet" region, where the new feet trigger does not have this threshold. The efficiency is measured using events selected by independent triggers.