The main task of the ALICE experiment at the LHC is to study the properties of the strongly interacting, dense and hot matter created in high-energy heavy-ion collisions: the QGP. Many physics analyses are based on the capability of the ALICE detector to perform Particle Identification (PID) using different and complementary techniques, (0.15 - 20) GeV/c. In the intermediate momentum range (from 0.3 to 4-5 GeV/c) this task is mainly accomplished using the Time Of Flight (TOF) detector. The TOF is based on the Multigap Resistive Plate Chambers (MRPC) technology; the base element is a double-stack MRPC of 5+6 gas gaps. We present improved performance achieved during LHC Run2. Time resolution reached 56 ps, close to performance achieved in beam tests.

The ALICE-TOF detector, after 10 years of operation, shows no degradation, very stable operations, no performance losses. Many physics analyses are based on the capability of the ALICE detector to perform Particle Identification (PID) using di different and complementary techniques, (0.15 - 20) GeV/c. In the intermediate momentum range (from 0.3 to 4-5 GeV/c) this task is mainly accomplished using the Time Of Flight (TOF) detector. The TOF-PID is extensively and successfully exploited in many analyses in ALICE. See for example other contributions at QM 2018. Time event is the event collision time: event collisions at ALICE, M. Colocci, Talk 15 May 2018, 15:40, 15 May 2018, 15:40. Energy dependence of particle production and composition in pp collisions with ALICE at the LHC, M. Colocci, Talk 15 May 2018, 15:40. Energy dependence of particle production and composition in pp collisions with ALICE at the LHC, M. Colocci, Talk 15 May 2018, 15:40.

After 10 years of operation TOF continues to ensure stable operations (2116 hours of data taking in 2017), ~99% total time availability, ~93% average active channels (the missing 7% is due to electronics and connectors, not to MRPC), No degradation during these years and a very good stability was found in current, trigger rate and in matching efficiency with ALICE reconstructed tracks (TPC+ITS).

Contributions to matching efficiency:
• MRPC efficiency (~98-99%)
• TOF algorithmic inefficiency
• TOF geometrical acceptance
• Budget material (in front of TOF)
• Track extrapolation
Performance stable during Run1 and Run2 (deviations due to last 2 bullets).

The largest area (144 m²) MRPC application in experiments at colliders, installed in 2008: After 10 years of operation TOF continues to ensure stable operations (2116 hours of data taking in 2017), ~99% total time availability, ~93% average active channels (the missing 7% is due to electronics and connectors, not to MRPC), No degradation during these years and a very good stability was found in current, trigger rate and in matching efficiency with ALICE reconstructed tracks (TPC+ITS).

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Tests with pp collisions at high rate demonstrated that the MRPC detectors can perfectly operate also at the expected luminosities of Runs 3 and 4.

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