

MicroTCA for the new **Beam Control of the CERN SPS**

Tuesday, December 7, 2021 3:45 PM (15 minutes)

The SPS LLRF system was completely upgraded during CERN Long Shutdown 2 (Jan 2019-March 2020). The new Beam Control implementing the beam-based Loops (radial and phase) and the frequency program (B to revolution frequency) is implemented on the MicroTCA platform. The AFCZ (AMC FMC Carrier with Zynq) and QSFP-RTM are used to interface with ADCs, two White Rabbit networks and 10 Gbps serial links. This modular system combined with a powerful Zynq SoC allows for the real-time control of our 8 RF cavity controllers and RF-synchronous equipment. The beam pick-up signals are direct sampled using FMCs with 125 Msps ADCs and later 5 Gbps enabling bunch-by-bunch processing and control. This presentation describes the architecture of the SPS Beam Control and the performance obtained with the MicroTCA platform after several month of beam commissioning with proton Fixed-Target, proton LHC and Lead ions beams (April 2021 – present).

Summary

Primary authors: SPIERER, Arthur (CERN); Mr BAUDRENGHIEN, Philippe (CERN); HAGMANN, Gregoire (CERN); Mr EGLI, Julien (CERN); Mr KOTZIAN, Gerd (CERN); Mr KUZMANOVIC, Predrag (CERN); Mr STACHON, Ireneusz (CERN); Mr WLOSTOWSKI, Tomasz (cern)

Presenter: SPIERER, Arthur (CERN)

Session Classification: Session 1