

The HL-LHC LLRF project

Monday, October 23, 2023 2:55 PM (20 minutes)

In the framework of the High Luminosity LHC project (HL-LHC), crab cavities (CC) will be installed on both sides of the LHC interaction point (IP) 1 (ATLAS experiment) and point 5 (CMS experiment) to restore an effective head-on collision and minimize the geometric luminosity loss which arises from the crossing angle. Two crab cavities will be installed on each side of the IPs for each beam for a total of sixteen cavities.

The stringent requirements of the low level RF (LLRF) for crab cavities will be briefly described along with the architecture of the LLRF system and of the RF feedback. The LLRF system will be much inspired from the former SPS LLRF upgrade put in operation in 2021, including the use of the MicroTCA platform, a digital deterministic links for synchronization (the so-called White Rabbit), and a constant clock frequency for the sampling and processing.

Keyword

CERN LHC HL-LHC LLRF crab cavity cavities MicroTCA FPGA White-Rabbit WR

Primary author: HAGMANN, Gregoire (CERN)

Co-authors: SPIERER, Arthur (CERN); BAUDRENGHIEN, Philippe (CERN)

Presenter: HAGMANN, Gregoire (CERN)

Session Classification: System and operation

Track Classification: System and operation