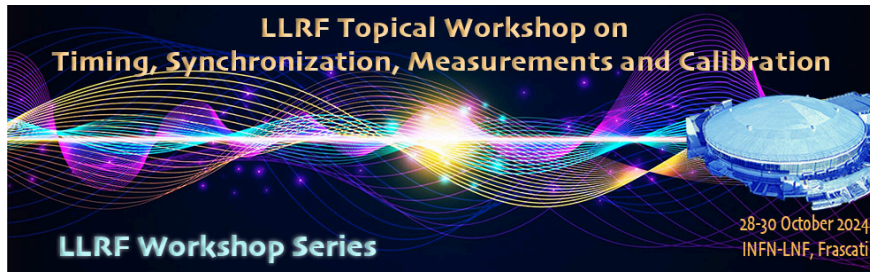


LLRF Topical Workshop - Timing, Synchronization, Measurements and Calibration



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HL-LHC RF distribution over White-Rabbit, the WR2RF and eRTM modules

Monday, 28 October 2024 16:55 (2 hours)

The Hi-luminosity Large Hadron Synchrotron (HL-LHC) is an upgrade of the LHC which aims to increase the instantaneous luminosity by 5 to 7.5-fold with respect to the LHC nominal value. During LS3 (2026-2028), Super-conducting crab-cavities will be installed around the ATLAS (point1) and CMS (point 5) experiments which are located several kilometres away from the existing main RF system (point 4). The RF signal distribution for RF users (Experiments, Beam-Instrumentation) will also be upgraded, with use of WR2RF modules, on the RF user side. The crab-cavities LLRF and WR2RF module are synchronized to the main RF system through a White-Rabbit (WR) network. The WR network is used for both clocks and RF synchronization between RF stations. The LLRF electronics is using fixed frequency sampling and processing clocks, and the clocks are reconstructed locally from the WR data stream and a low noise PLL.

The plans of the RF distribution, clock generation and the main hardware modules involved will be presented with results from prototype tests.

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