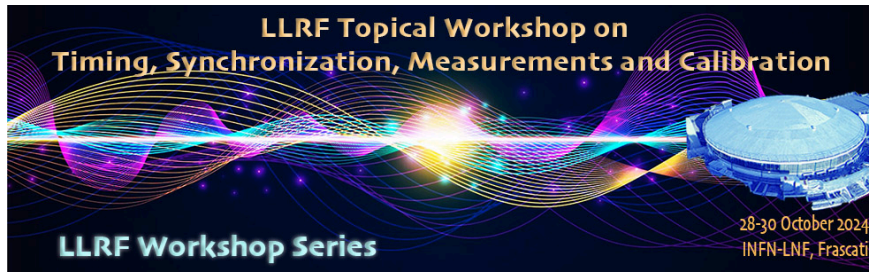


LLRF Topical Workshop - Timing, Synchronization, Measurements and Calibration



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RF Phase Reference Distribution System for RAON Heavy-ion Accelerator

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

The heavy-ion accelerator of the Institute for Rare Isotope Science (IRIS) has been developed and beam commissioning for the low energy superconducting linear accelerator has been performed. There are three types of SRF cavity, which are 81.25 MHz quarterwave resonator (QWR), 162.5 MHz half-wave resonator (HWR), 325 MHz single-spoke resonator (SSR). There are 22 QWRs and 102 HWRs in the low-energy superconducting linac (SCL3), and 69 SSR1s and 144 SSR2s in the high-energy superconducting linac (SCL2). The RF reference distribution system must deliver a phase reference signals to all low-level RF (LLRF) systems and BPM systems with low phase noise and low phase drift. The frequencies of RISP linac are 81.25MHz, 162.5MHz and 325MHz, and there are 130 LLRF systems and 60 BPMs respectively for SCL3, and 240 LLRF systems and 70 BPMs for SCL2. 81.25 MHz signal is chosen to the reference frequency, and 1-5/8" rigid coaxial line is installed with temperature control. This paper describes the design, test results and operation during the beam commissioning of the low-energy superconducting linac.

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