

Low Level RF Workshop 2022



9-13 Oct 2022, Brugg-Windisch, Switzerland



Contribution ID: 75

Type: **Oral**

Operational Experience of the SELAP Algorithm for LLRF Control System at JLAB

Thursday, October 13, 2022 10:20 AM (20 minutes)

The JLAB LLRF 3.0 system has been developed and is replacing the 30-year-old LLRF systems in the CEBAF accelerator. The LLRF system builds upon 25 years of design and operational RF control experience (digital and analog), and our recent collaboration in the design of the LCLS-II LLRF system. The new system also incorporates a cavity control algorithm using a fully functional phase and amplitude locked Self Excited Loop (SELAP). The first system (controlling 8 cavities) was installed and commissioned in August of 2021. Since then the new LLRF system has been operating with cavity gradients up to 20 MV/m, and electron beam currents up to 400 mA. The second system was installed and commissioned in May of 2022. In addition to this, the new software and firmware are installed and being tested in LLRF 2.0 system. This paper discusses the operational experience of the LLRF SELAP algorithm along with other software and firmware tools such as klystron characterization, cavity characterization, quench detection and dynamic power allocation for beam current.

Primary authors: BACHIMANCHI, Ramakrishna (Jefferson Lab); Mr MOUNTS, Clyde (JLAB); Mr HIGGINS, Scott (JLAB); LATSHAW, James (Jefferson Lab); PLAWSKI, Tomasz (Jefferson Lab, Virginia, USA); HOVATER, Curt (Jefferson Lab)

Presenter: BACHIMANCHI, Ramakrishna (Jefferson Lab)

Session Classification: Superconducting RF

Track Classification: Low Level RF Workshop 2022