

LLRF Topical Workshop - Timing, Synchronization, Measurements and Calibration



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Calibration and Measurement techniques in the LLRF systems of the Fermilab PIP-II Linac

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The PIP-II Accelerator is an 800 MeV superconducting Linac in the injection chain of the Fermilab accelerator complex. The LLRF systems are based on two different hardware platforms controlling a variety of cavity types and resonance control systems including temperature, pneumatic and piezo tuners. The various calibrations required prior to beam operation include, signal power, gradient, amplifier characterization, cavity Q measurement and detune constants. Measurements such as piezo capacitance, cavity piezo transfer function help in determining tuner health and in devising microphonics control strategies. These measurement and calibration methods of the PIP-II LLRF system are discussed here.

Primary author: VARGHESE, Philip (Fermi National Accelerator Laboratory)

Co-author: HOLZBAUER, Jeremiah (Fermi National Accelerator Laboratory)

Presenter: VARGHESE, Philip (Fermi National Accelerator Laboratory)

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