

DETERMINATION OF BEAM CHARGE USING STRIPLINE SIGNALS AT THE RF FREQUENCY BY FAST SIGNAL PROCESSING IN A FPGA

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Abstract

Traditional methods of measuring beam charge requires integration of a signal from a fast current transformer. Ultimately the integral of a transformer signal is zero, practical measurements are achieved by taking a finite integration, which leads to some error. In the method proposed here the signal at the carrier frequency (RF frequency) is sampled (from a stripline) and demodulated in an FPGA to determine the total charge. By time multiplexing the stripline signals from different parts of the accelerator complex, cross calibration can be achieved.

NO SUBMISSION RECEIVED