Real-time observation of non-interceptive Beam Current and Beam Position Measurements for FLASH and Conventional Proton Therapy at PSI

Using PSI’s compact cavity monitors (reentrant EM resonators)

Libera Digit 500

Beam Current / Beam Position Observation @ 1 kHz refresh rate enabling 1 ms resolution

BCM (resonator) response using Libera Digit 500 for 230 MeV

Cavity BPM response for a 100 nA and 2 mm offset proton beam recorded using Libera Digit 500


A Libera customized solution
Fast Orbit Stabilization for Proton and Heavy Ion Synchrotrons

BPM SYSTEM

Variable gain low-noise preamplifier

Libera Hadron with orbit feedback capabilities

Data Exchange and magnet control modules
Digital LLRF System for Medical Accelerators

Desired phase & amplitude

Reference RF signal

Low Level RF system

Drive signal

High power RF amplifier e.g. klystron

Probe signal

High power RF output

RF cavity

Beam