MULTIMODE DIGITAL INTEGRATORS WITH RIGID TRIGGERING

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Abstract

The report describes two models of digital integrators, intended for magnetic measurements with the relative accuracy close to 10^-5. One of the main features of these devices is rigid synchronization with external timing pulses, allowing determining the moment of integral measurements with nanosecond accuracy. As a result these integrators provide high accuracy both for the pulsed measurements and for the constant magnetic field measurements using movable coils also.

The discussion considers some theoretical issues of the digital integration technique and related error sources. The structure of digital integrator is presented, and key features are listed.

In conclusion a brief description of two magnetic measurement systems is given. The first system is used for measurements of pulsed magnets in injection and extraction section of 3 GeV Booster Ring at NSLS-II facility. The second one describes the electronics of stand for measurements of magnetic quadrupole lenses, manufactured in BINP for NSLS-II Main Ring.