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Study and FPGA implementation of BPM algorithm for synchronized light source

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Beam Position Monitor (BPM) system is an important part of the beam measurement system, which plays a vital role in the stable operation of the accelerator. In this paper, based on the requirement of high resolution of the BPM system, the DBPM algorithm is implemented on Matlab and FPGA, firstly, the overall design of the DBPM algorithm is introduced; secondly, the implementation method of each module is elaborated in detail; and again, the existing simulation data and the beam current data are simulated in the Matlab and Modelsim environments respectively, using the quadrature demodulation and Moving Average Filter; finally, do offline testing based on this DBPM algorithm Experimental. Results show that the quadrature demodulation algorithm incorporating a sliding average filter has higher positional resolution.

Footnotes

Funding Agency

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Yes

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