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Research and develoment of a picosecond timing system

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One of the crucial elements of any scientific installation, especially in particle accelerators, is the timing system. Timing systems are used for providing a common notion of time to all the elements of the facility as well as for the generation of discrete events and periodic signals that are shared by the different elements across the accelerator. In addition, it also can be used for radiofrequency dissemination across the whole facility.

In this work it is presented the timing system architecture currently under development by Orolia Spain for the distribution of synchronized triggers. The hardware, based on FPGA, is described. The system allows total flexibility when configuring the triggers in terms of direction, number of pulses, pulse rate, pulse period and delay.

Facilities are increasingly demanding better performance. The system proposed is intended to achieve high precision triggers with resolutions in the order of 5ps. The performance achieved will be shown in this work.

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Footnotes

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Yes

Primary author: GIL, Pilar (Orolia Spain)

Co-author: FERNÁNDEZ, Juan (Seven Solutions)

Presenter: GIL, Pilar (Orolia Spain)

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