New generic method for measuring the time of arrival of an electrical signal

Reference	PICOTI [D02759]
Key words	TDC, TDL, TIME OF FLIGHT, LIDAR, PICONSECOND,

APPLICATIONS

- TEP-Scan, Hadrontherapy, FLIM
- Depth sensing – LIDAR
- High Energy Physics
- Photon counting

TARGET MARKETS

- TDC providers
- Manufacturer of Electronics/photonics devices
- Embedded systems developers

Technology readiness level

TRL 5

INTELLECTUAL PROPERTY

Working on a patent registration

LABORATORIES

- IP2I / CNRS / Université de LYON

DESCRIPTION

In the field of measurement and more particularly for the detection of events, a high degree of precision in the timing is fundamental. This precision can be obtained by implementing TDC - Time to Digital Converter on computer chips. Different methods are now available to achieve picosecond precision, and now the challenge is to achieve picoseconds at a moderate cost.

A solution based on a VHDL code implemented on an FPGA, or software code in post-processing on a computer (or on embedded system) has been developed, showing that we can achieve a very high temporal resolution with a simple and inexpensive implementation.

COMPETITIVE ADVANTAGES FOR AFM

- Time resolution measured of the order of 1ps RMS
- Ease of implementation
- Cost reduction: Code on a single FPGA or code improvement of commercial TDC
- Short dead time between two measurements: a few ns
- Significant reduction in FPGA resource consumption
- Generic solution that can be adapted to the configuration of use

STAGE OF DEVELOPMENT

Working proof of concept prototype available

PARTNERSHIP TYPE

PULSALYS is looking for industrial partners for the commercialization of the technology.

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