



Contribution ID: 57

Type: **not specified**

SP7: ROOT based tools for DAQ data analysis of the PITZ gun operation

Friday, July 21, 2017 11:18 AM (3 minutes)

Conditioning of an L-band RF gun is a lengthy process (typically about 3 months).

The evaluation of the conditioning progress and of the reliability of the operation involves tens of sensors (RF measurements, photomultiplier signals, interlocks, pressure gauges, etc.) which are acquired at 10 Hz repetition rate.

In order to simplify the gathering of this large volume of data from the data acquisition system (DAQ) and its analysis, a ROOT based library of tools has been developed. That library can take into account that measured physical properties can have complex history: the name of the variable within the control system, the scale or the offset can change over the period of interest. Simple functions allows to retrieve the data from the DAQ, analyze and plot the results. Tools from the library is routinely used for different purposes such as to generate automatic shift summaries or to create operation overview for the run coordination meetings at PITZ.

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Session Classification: Speed-Posterpresentation: Controls, Synchronization, Stability

Track Classification: Speedposter_Controls, Synchronisation and Stability