

Contribution ID: 11

Type: not specified

X-BPM development at the ESRF, and its indispensable use for verifying the genuine stability of our source

Tuesday 7 June 2022 11:00 (30 minutes)

Very beneficial use is now being made of available vacuum chambers in the Front-Ends of our bending magnet beamlines by installing & operating a newly developed X-BPM that measures (only) the vertical X-ray position at 23m from their source-point.

These simple and low-cost X-BPMs convert through a scintillator screen the hard-rays into visible light, that is being captured and imaged by a compact lens & camera system. In 2 units of a first prototype version (installed Oct. 2021) the device is not compatible with the BM-users taking their beam which is of course a major limitation.

However, over a few long periods when the X-BPM could be left inserted it has generated very interesting information and insight on local positional variations, mainly on slow time-scales of hours & days.

A 2nd version is now designed to measure continuously these variations. It will only use these X-rays just beside those used by the beamlines. The ESRF serves a total of 17 such BM beamlines and potentially all can be equipped with such X-BPM, and its output is foreseen for serving a control loop to gain significantly in stability.

Results of the first 2 units will be presented, and this in close correlation with some deficiencies of some of our electron BPMs.

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Session Classification: Tuesday morning