FIRST STEPS TOWARDS A FAST ORBIT FEEDBACK AT ALBA

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FOFB LAYOUT

SECTOR S0

SECTOR S1

Description

• ALBA FOFB system is designed to achieve orbit stability on the sub-micron level up to frequencies in the 100 Hz range • This first stage "low-cost" system will be an ideal test-bench to learn about beam stabilization and find possible problems and improvements on it

Optical Link Interface

• Sends the correction values to the correctors PC

ALBA

• Consists of Transition Boards (Tx) to produce the optical signals, controllers embedded into IP modules and cPCI carriers for the IP modules



Libera Brilliance eBPM electronics • 88 BPMs out of the 120 available will be used on FOFB Diamond Communication Controller protocol for data transfer





Corrector Magnets

- vertical and 88 horizontal • 88 corrector magnets
- The correctors coils are extra wirings in the sextupole magnets

effective • To have more a thickness penetration field, 1mm reduction on the vacuum chamber where the magnets are has been done



Correction

Calculation CPU

• Retrieves the position data from the PMC FPGA board and performs the correction calculation • Adlink 4-Cores cPCI-3970 running soft real time Linux 2.6.27

PMC FPGA boards

- Receives the position data from all eBPMs electronics at a 10kHz rate and makes it available for the correction calculation CPU
- Re-use of some Micro-Research EVR-230 boards that we had in-house
- Only have one single optical link for position data transfer
- Integration of the communication protocol has been done by Diamond



SECTOR S09 SECTOR S08

Corrector Power Converters (PC)

• Power Converters have been provided by OCEM company (now in bankrupt) • Communication protocol from IP modules down to the power converters is based on a PSI protocol and is part of the correctors PC contract with the company





FOFB STATUS

