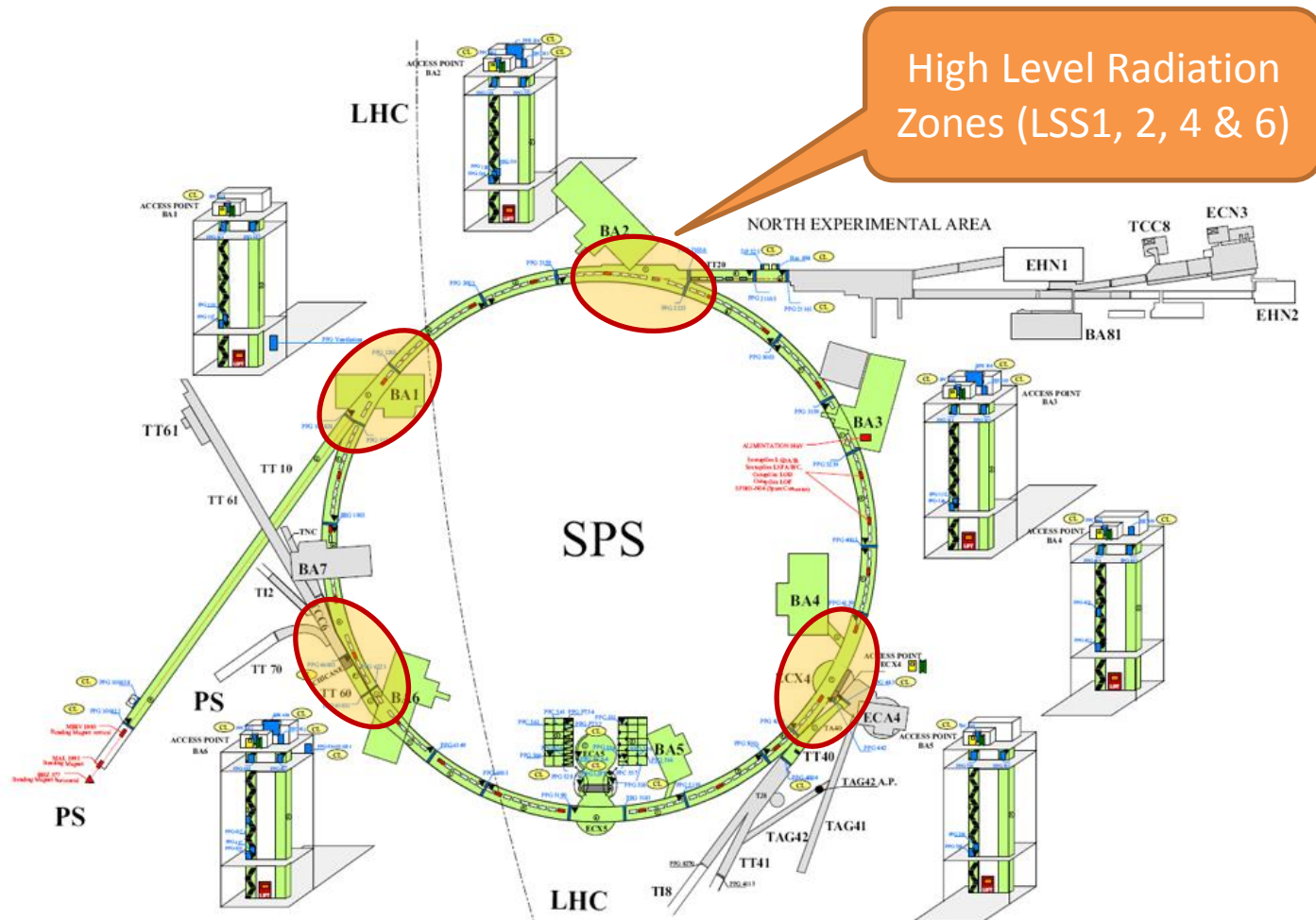


SPS Beam Position Monitors: Front-End Electronics

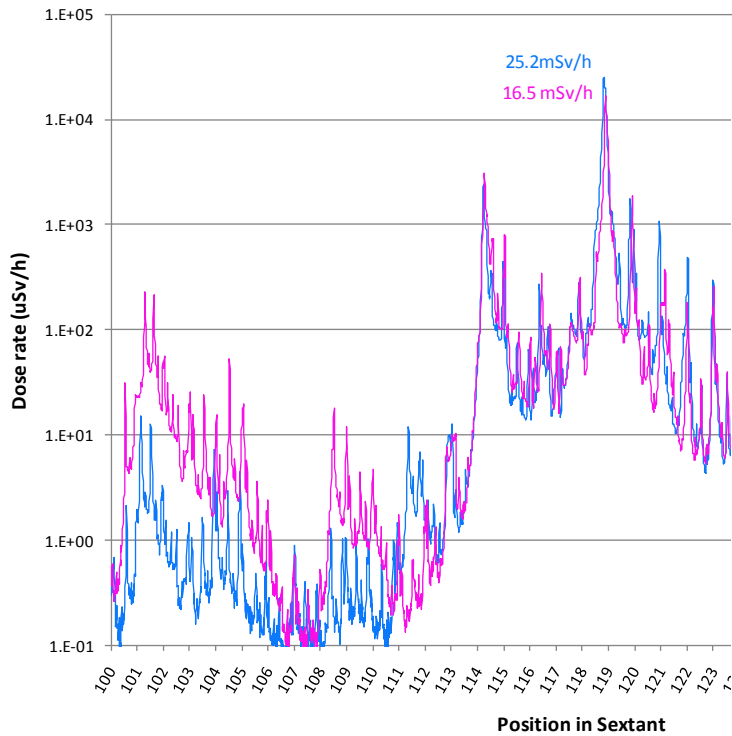
- SPS Radiation Survey Overview
- BPM Acquisition Architecture
- Components for Irradiation Tests

SPS Layout

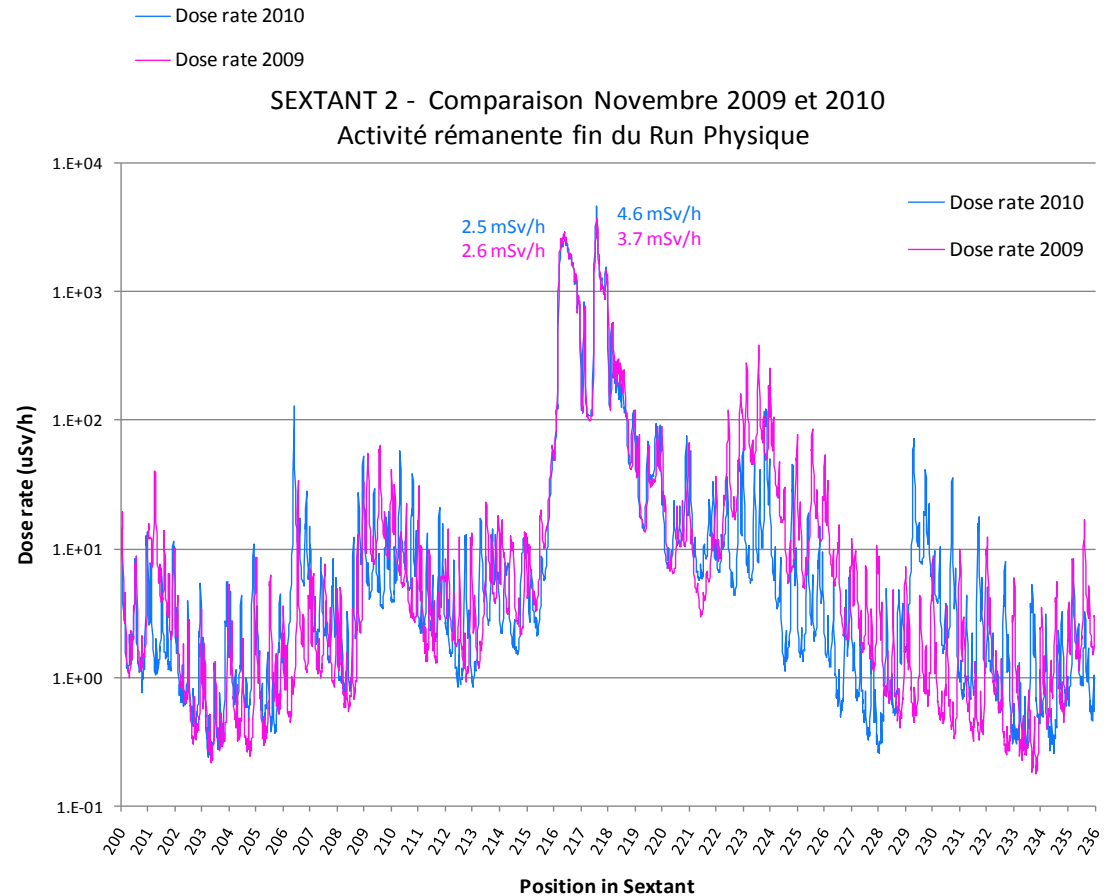


SPS Radiation Survey

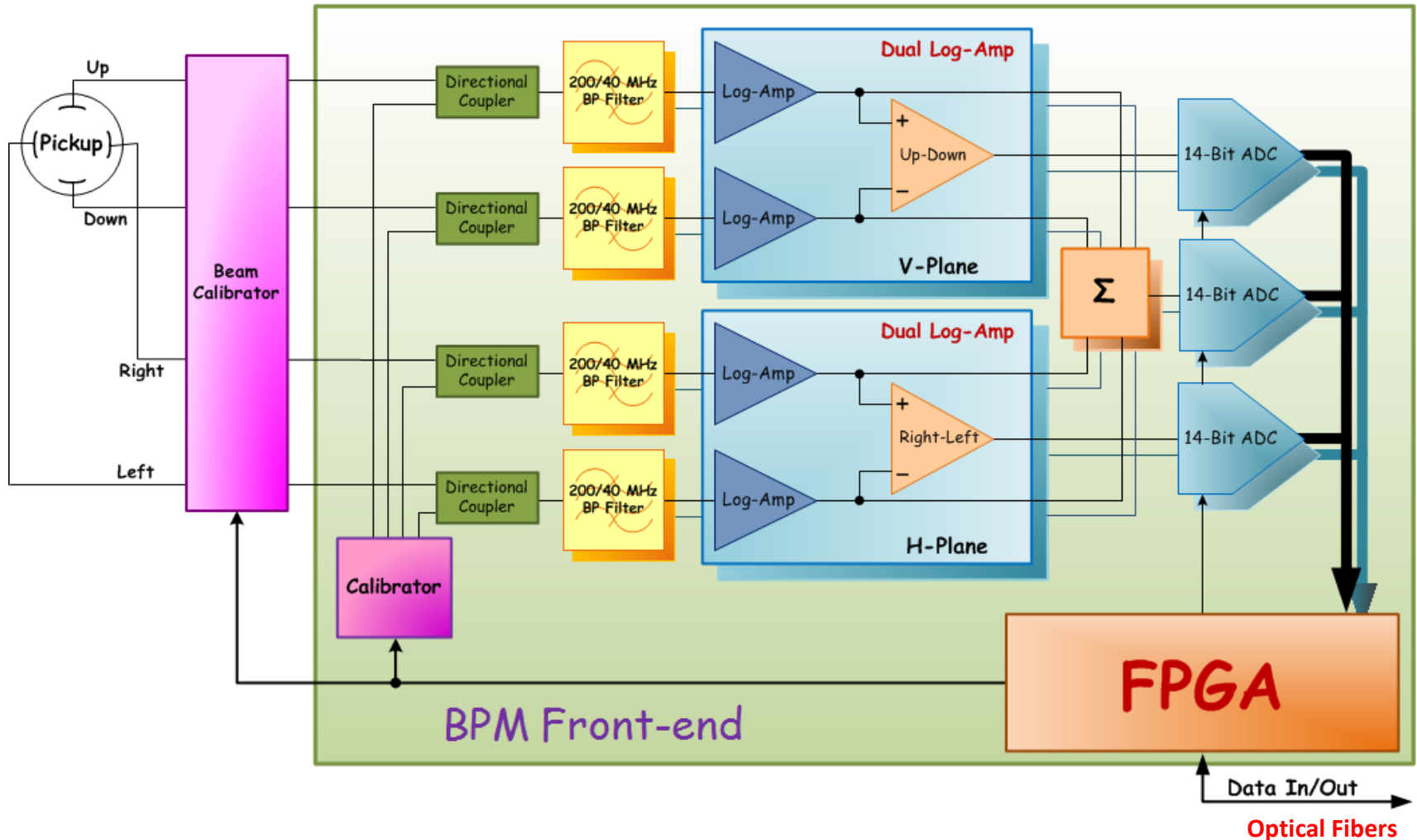
SEXTANT 1 - Comparaison Novembre 2009 et 2010
Activité rémanente fin du Run Physique



SEXTANT 2 - Comparaison Novembre 2009 et 2010
Activité rémanente fin du Run Physique



Front-End Architecture





Analogue Components

- LogAmps
 - ADL5519: *Analog Devices*, Dual Log Detector
 - MAX2016: *Maxim*, Dual Log Detector
- ADC Drivers
 - ADA4932: *Analog Devices*, Differential ADC driver
 - THS4521: *Texas Inst.*, Differential ADC driver
- ✓ These components have been qualified at PSI (TID 1kGy)

Analogue Components

- Low Dropout Regulators
 - **LT1963A**: *Linear Tech.*, LDO Regulator (1/3 bad)
 - **LP3875**: *National Semi.*, LDO Regulator (3/3 bad)
 - **TL1963A**: *Texas Inst.*, LDO Regulator
 - **TPS7A4501**: *Texas Inst.*, LDO Regulator
- ✓ These components have been qualified at PSI (TID 1kGy)

- Tested at PSI, July 2012: Single-Fiber, 1.25Gb/s Bidirectional SFP Transceivers
 - *Ligent*
LTE5350-BC & LTE3550-BC
 - *Lightron*
WSP24-313LC-I5A & WSP24-513LC-I3A
 - *Source Photonics*
SPL-35-GB-CDFM & SPL-53-GB-CDFM
 - *Yamasaki*
S41315L-15B & S41315L-15Y





Optical Components

- Single-Fiber, ≥ 2.5 Gb/s Bidirectional SFP Transceivers
 - *FTTX Technology*
FT5A05D-35 & FT5A05D-53
 - *Ligent*
LTP2361-BC & LTP3261-BC
 - *Lightron*
WSP48-3S3LC-I5A & WSP48-5S3LC-I3A
 - Other...



Analogue/Digital Converters

- 40...65Mps – LVDS Serial ADC
 - AD9252: *Analog Devices* **Octal** 14-bit
 - AD9259: *Analog Devices* **Quad** 14-bit

 - LTM9009: *Linear Tech.* **Octal** 14-bit
 - LTC2171: *Linear Tech.* **Quad** 14-bit

 - ADS5294: *Texas Inst.* **Octal** 14-bit
 - ADS6442: *Texas Inst.* **Quad** 14-bit

- Low Voltage Buffers
 - 74VCX162244: *Fairchild* 16-bit Buffer/Line Driver
 - 74ALVCH162244: *Texas* 16-bit Buffer/Line Driver
 - 74VCX162827: *Fairchild* 20-bit Buffer/Line Driver
- LVDS Buffers
 - FIN1108: *Fairchild* 8-port LVDS Repeater

Irradiation Tests

- Tests of Optical SFP components (CNRAD)
 - Test Board equipped with 1.25 Gb/s Transceivers, installed during technical stop, June 27, 2012
 - Irradiation tests continue up to beginning 2013
- Tests Foreseen in 2013 at PSI:
 - 2.5Gb/s Single-Fiber Optical SFP Transceivers
 - 14-bit Serial ADCs
 - Digital Buffers



Project Development Plan

- Hardware Production and Test
 - Prototype tests with beam (Nov. 2012)
 - Series production (2013)
 - Qualification and test of the series (2013-2014)

**Hardware Installation in 1 Sextant
(end 2013 – mid 2014)**