

## ADT BPMs as observation device

R. De Maria (user),  
W. Höfle (responsible), D. Valuch (hardware), M. Schokker  
(firmware), F. Dubouchet(Fesa class), V. Kain (application).

February 9, 2011

## Hardware devices

The ADT BPMs are used in the transverse damper feedback loop as measuring devices.

The bunch position can be extracted and stored regardless if the damper is active or not using directly from the same acquisition board.

There are 2 BPMs equipped per plane, per beam for total of 8.

# Hardware names

## names

BPMC.9L4.B1      Q9H.B1

BPMC.7L4.B1      Q7H.B1

BPMCA.7R4.B1     Q7V.B1

BPMC.9R4.B1      Q9V.B1

BPMC.9L4.B2      Q9V.B2

BPMC.7L4.B2      Q7V.B2

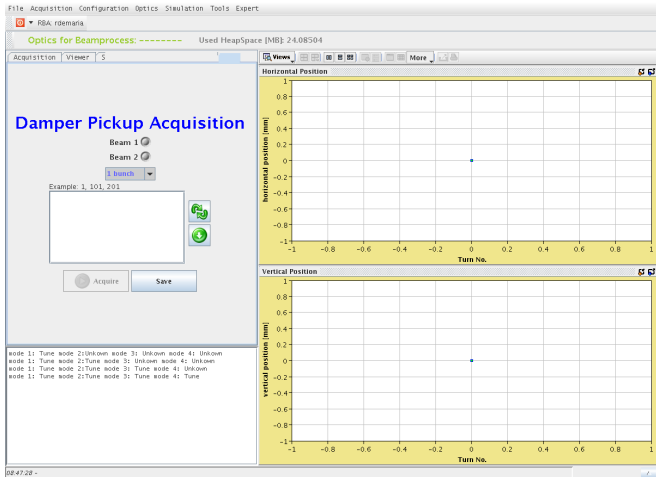
BPMCA.7R4.B2     Q7H.B2

BPMC.9R4.B2      Q9H.B2

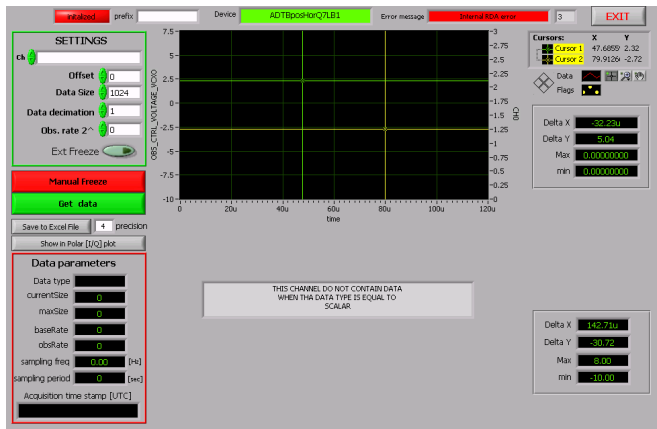
## Operation modes

- ▶ Each acquisition board has a buffer for 262144 positions. It has the following operations modes:
  - ▶ 1 selectable bunch for 262144 turns
  - ▶ 2 selectable bunches for 131072 turns
  - ▶ 4 selectable bunches for 65536 turns
  - ▶ 8 selectable bunches for 32768 turns
  - ▶ all 25ns slots continuously for about 73 turns
- ▶ The control room application (MultiTurn) can control modes 1,2,4,8 but not 'all'. Data is saved in ascii for one beam without timestamps.
- ▶ The lowlevel ADT system can control mode 'all'. Data is saved for one BPM only in ascii without timestamp. RF piquet role is required.

# Observations LHC MultiTurn Application



# Observations Low level RF control



## Calibration factors protons

There is an offset between LHC BPM and ADT BPM. Calibration depends on actual beta functions.

optics 6.503 / calibration table of summer 2010

	Q7	Q7	Q9	Q9
	beta	cal	beta	cal
	m	steps/mm		m
H.B1	112.1	8059	127.2	6391
V.B1	126.7	8000	137.8	6931
H.B2	173.8	6337	106.3	7038
V.B2	169.5	7523	140.1	7773

## Calibration factors ions

BPM	pos [mm]	pos [u]	BPM	pos [mm]	pos [u]
Q7HB1	0.926	11550	Q7HB2	0.5853	7950
	0.091	2770		1.6079	14700
	-0.977	-5660		-0.4338	1200
Q9HB1	0.500	2700	Q9HB2	0.4463	3150
	1.49	10460		1.5458	12320
	-1.0	-8900		0.563	-5500
Q7VB1	1.0837	11625	Q7VB2	+1	14250
	0.1218	4550		0	7040
	-0.8388	-2600		-1	-480
Q9VB1	1.1889	6500	Q9VB2	0.849	5150
	0.1688	-1300		-0.0835	-1750
	-0.8473	-9550		1.0184	-8825