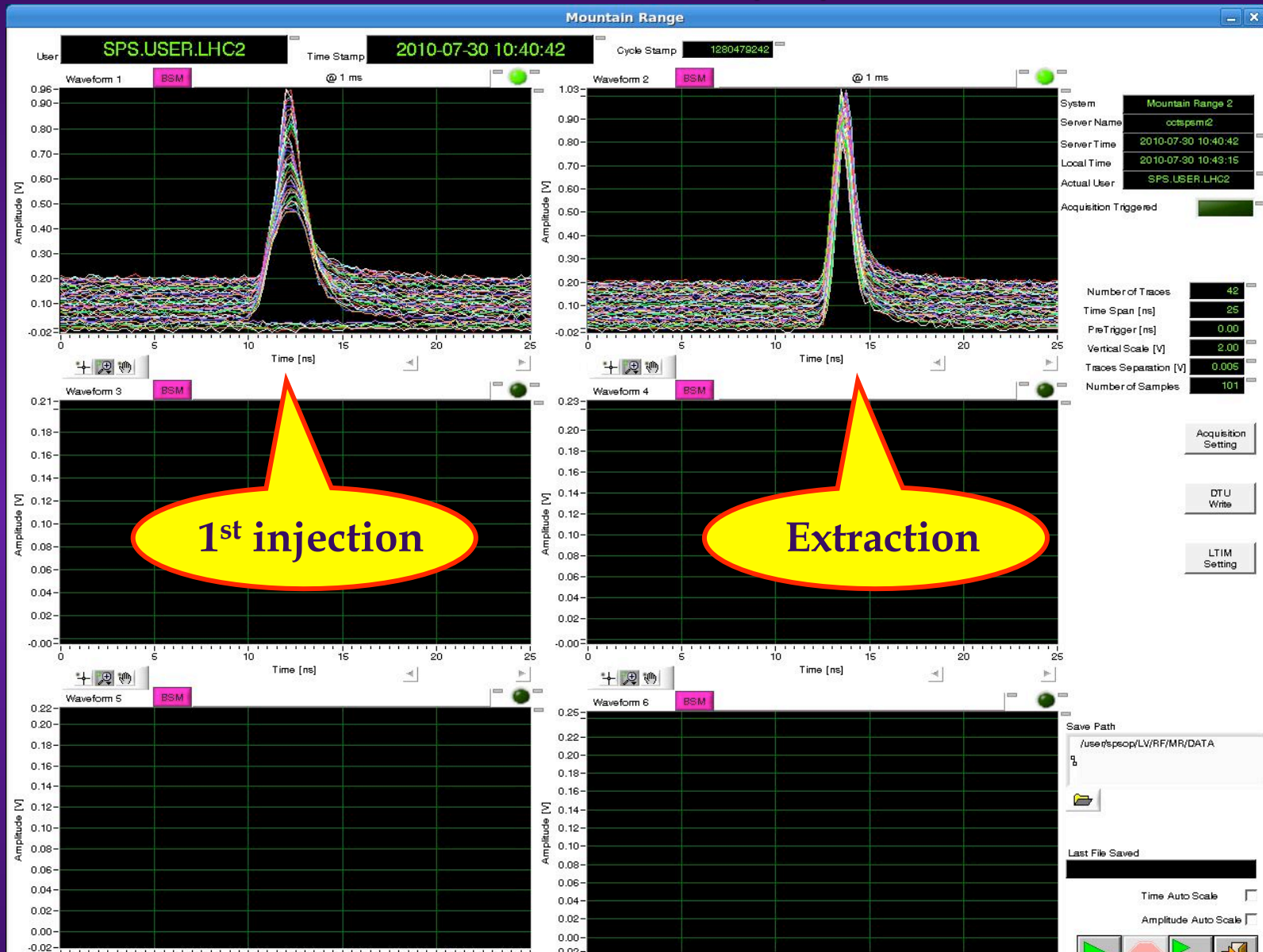


# MOUNTAIN RANGE AND BSM

E. Métral

- ◆ **Cycle LHC2 with RF MMI MD1, and only 1 bunch injected on the 1<sup>st</sup> injection (but possibility to have 4 injections, with 1 bunch/injection, and the spacing in the SPS between the bunches is 500 buckets 5 ns)**

# On 30/07/2010 (1/6)



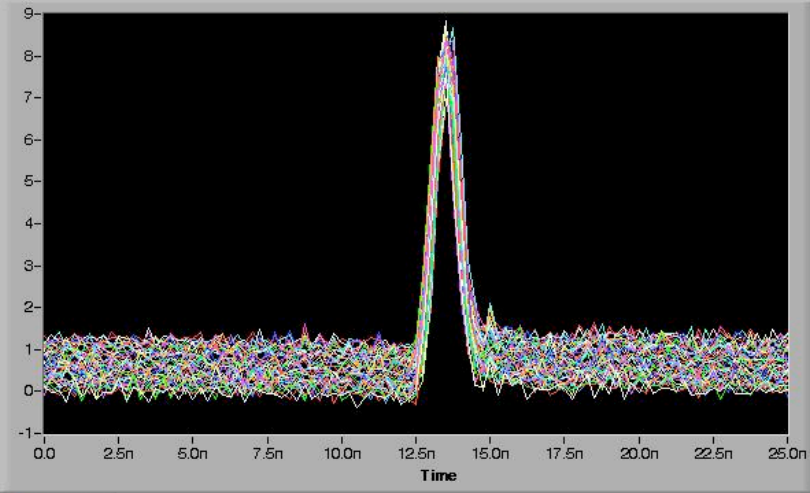
On 30/07/2010 (2/6)

Beam Shape Measurement

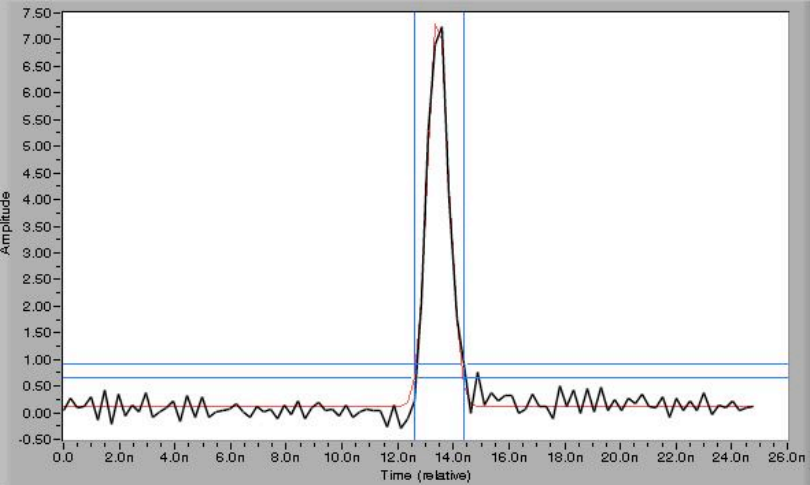
2010-07-30 10:43:44 SPS.USER.LHC2

View a trace View a bunch color plot of intensity Parameters for calculation Acquisition INFO !

LSA parameters	Constant machine	Calculated
Total voltage (GV) 0.002	harmonique 4620	eta 0.00349836
Momentum P (GeV/c) 13.50	Radius SPS (m) 1100	phase stable 0.0153717
Bdot 0.006 (used for acceleration)	beta (v/c) 0.9999	frev 43371.5
	Gamma transition 22.6	



Select user: SPS.USER.LHC2 Select trace: 5 Select bunch: 1



Cursor length: 1.73n Cursor amplitude: 0.253

Cable Correction:

Bunch Length (4...)  
1.47E-9

emittance longitudinale (eVs)  
0.033649109153213

Dp/p  
2.1547

Start Acquisition mode

Save all traces

Save selected trace

EXIT

**Clicking on the BSM knob for the extraction case => the bunch seems to be OK but not the momentum and therefore not the long. emitt.**

On 30/07/2010 (3/6)

The screenshot shows the 'FastTimingNew.vi' application window. At the top, there are four buttons: 'READ from Hw', 'READ from File', 'WRITE to File', and 'WRITE to Hw', along with a red 'CLOSE' button. Below these is a 'UserSelector' dropdown menu set to 'MD1'. The main area is divided into 'DTU Datas' and 'DTU Settings Explained'. The 'DTU Datas' list shows parameters for three bunches, with the second bunch highlighted in cyan. The 'DTU Settings Explained' panel on the right lists parameters like CT, BU, and HA. At the bottom, there is a 'Path' field and a 'Reading/Writing Hardware' progress bar.

**1<sup>st</sup> block of data (before the Next) is for the 1<sup>st</sup> injection => Adjusted on the 1<sup>st</sup> bunch with number 1660**

**In the present case the 2<sup>nd</sup> bunch is still at 1660 because we had only 1 bunch => Doing so we see the extraction of this bunch, which worked (see previous slide)**

**2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> blocks of data are for the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> injections => Adjusted on the 2<sup>nd</sup> bunch (i.e. # 1660 + 500 = 2160), 3<sup>rd</sup> bunch (i.e. # 2160 + 500 = 2660) and 4<sup>th</sup> bunch (i.e. # 2660 + 500 = 3160)**

On 30/07/2010 (4/6)

FastTimingNew.vi

File Edit View Project Operate Tools Window Help

READ from Hw READ from File WRITE to File WRITE to Hw CLOSE

UserSelector MD1

DTU Data

DTU Settings Explained:  
=====  
Parameters:  
-----  
CT Context (default 4)  
BU Bunch to show (101 ...)  
HA Harmonic number (default 4620)  
TU Turns between acquisitions  
DC Delay setting (do not change)  
DE Delay setting (do not change)  
WC Window clock (do not change)  
WI Number of pulses at each acquisition

How to modify the settings:  
-----  
1 Read from file or HW  
2 Carefully replace the Data Tab of the cycle to be modified (and spaces)  
If a new parameter is added the Head section must be edited with the key word "Next:" added after each parameter  
The word "End." must appear at the end of the parameters list  
3 Write to file or to HW

Controls Explained:  
=====  
READ from HW:  
-----  
Read the actual DTU setting for all the cycles.

READ from File:  
-----  
Reads the operational files for all the cycles (Ex: DTUconfig2) from the configuration repository.

The DataTab:  
-----  
Container for the DTU setting for each cycle can be edited

Path: /user/psop/LV/RF/MR/DTU

Reading/Writing Hardware

The last block of data is for the extraction => Adjusted again on the 1<sup>st</sup> bunch 1660

On 30/07/2010 (5/6)

LTIM Display

Timing: All Injections (SX.RF1-6-3) Device: SX.RF1-6-3

LTIM Setting

User	Status	Delay	Load Event	Errors
SPS.USER.CNGS1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.CNGS2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.CNGS3	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.COAST1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.COAST2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.COASTPR1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.COASTPR2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.COASTRE1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.COASTRE2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHC1	ENABLE	2020	SIX.W20-CT	Successfull
SPS.USER.LHC2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHC3	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHC4	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCFAST1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCFAST2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCFAST3	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCION1	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCION2	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCMD1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCMD2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCMDION	ENABLE	19	SIX.W20-CT	Successfull

Buttons: Edit Refresh Close

**=> We trig 1 ms before injection**

On 30/07/2010 (6/6)

LTIM Display

Timing: All Injections (SX.RF1-6-3) | Device: SX.RF1-6-3

Injection (SX.RF1-6-2)  
✓ All Injections (SX.RF1-6-3)  
Fast Extraction (SX.RF1-6-4)

		Delay	Load Event	Errors
SPS.USER.CDASTRE2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHC1	ENABLE	2020	SIX.W20-CT	Successfull
SPS.USER.LHC2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHC3	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHC4	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCFAST1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCFAST2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCFAST3	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCION1	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCION2	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCMD1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCMD2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.LHCMDION	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.MD1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.MD2	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.SFTION1	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.SFTION2	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.SFTLONG1	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.SFTLONG2	ENABLE	19	SIX.W20-CT	Successfull
SPS.USER.SFTMD	DISABLE	19	SIX.W20-CT	Successfull
SPS.USER.SFTPRO1	ENABLE	19	SIX.W20-CT	Successfull

Edit Refresh Close