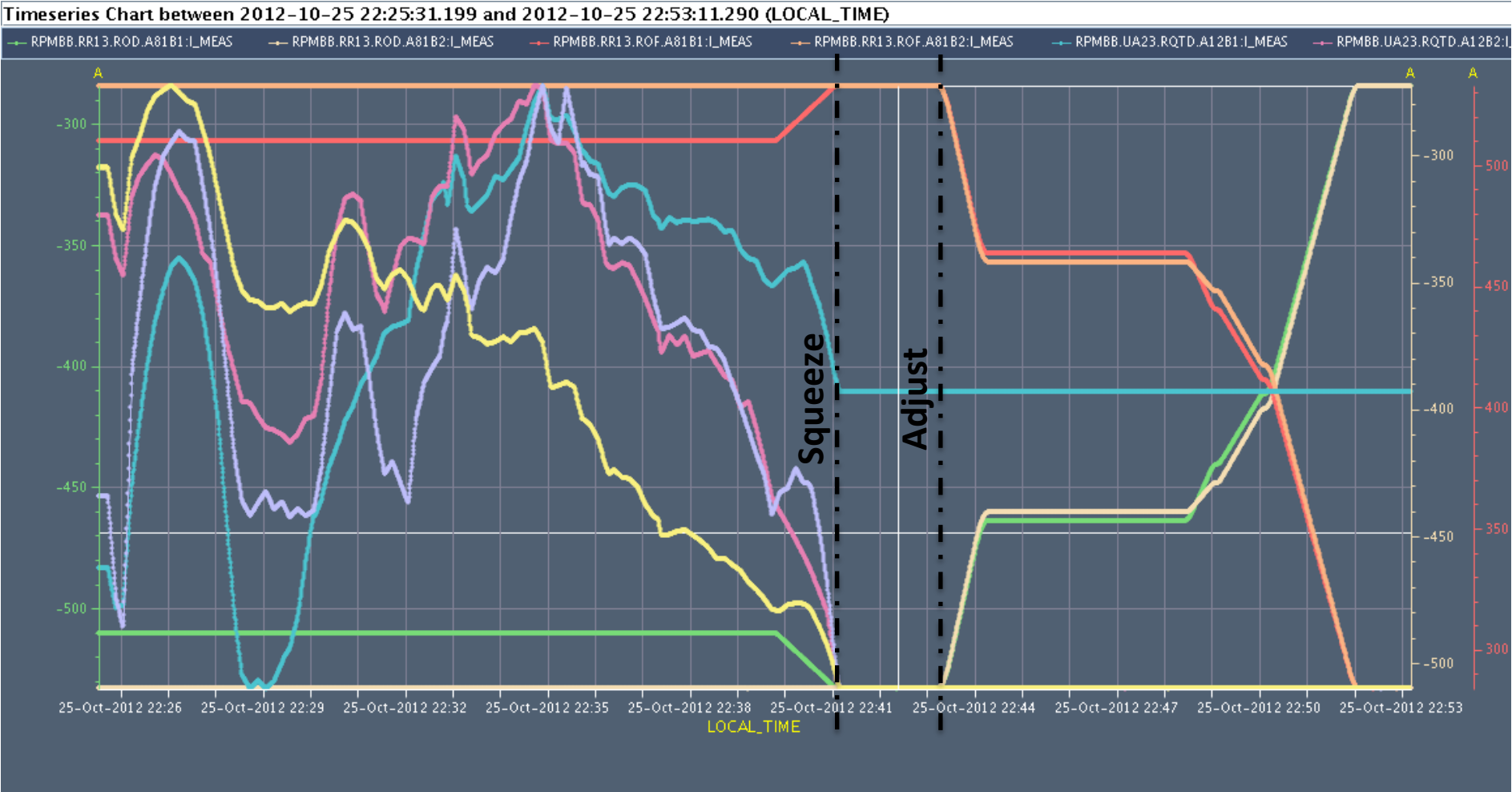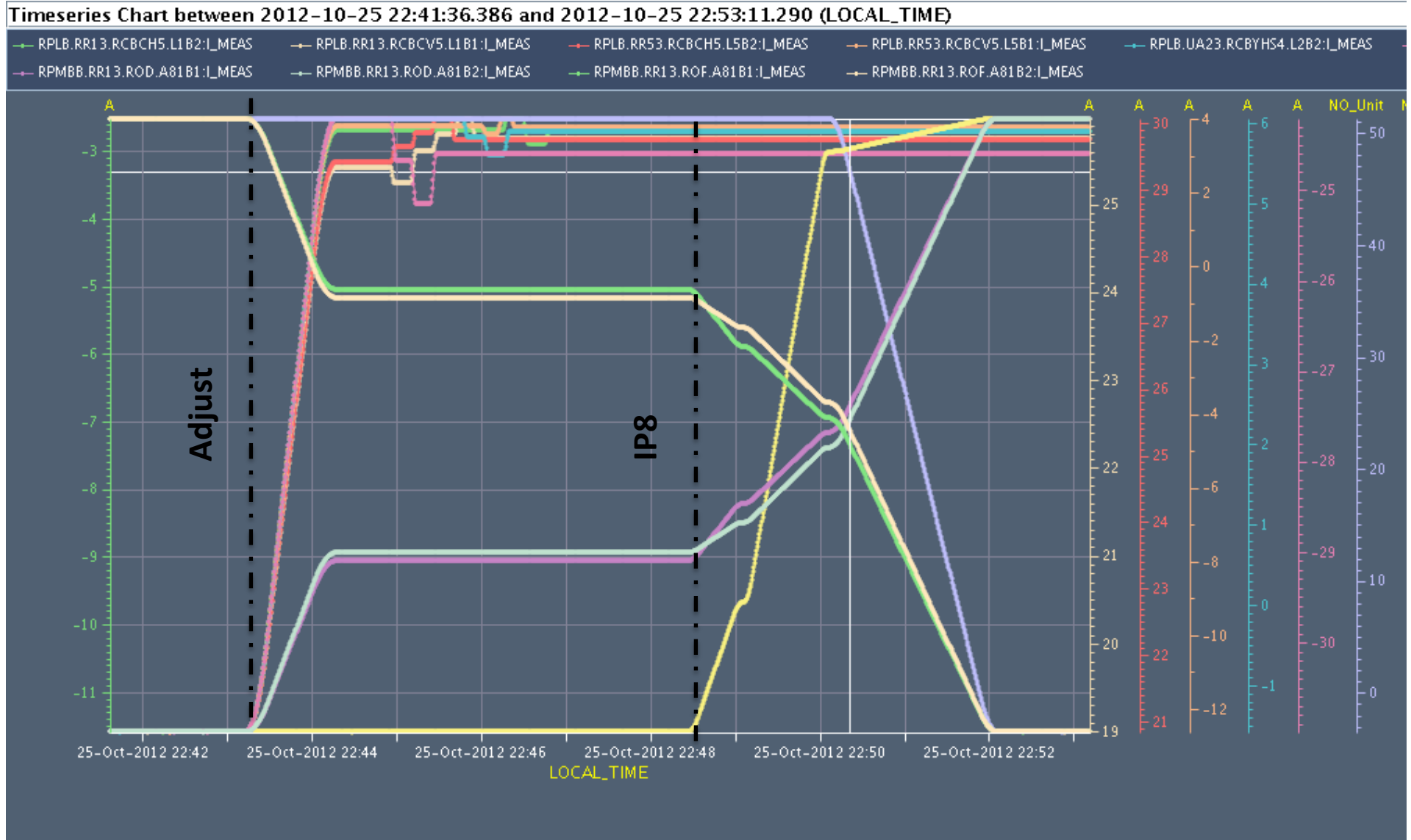# Observations of instabilities:
Before change of Oct polarity (LBOC 31 Jul)
Change of Octupole Polarity (LBOC 14 Aug)
Change of Collision beam process
Fill 3102-3108-3223-3229-3231-3236

T. Pieloni and X. Buffat
for the beam-beam team
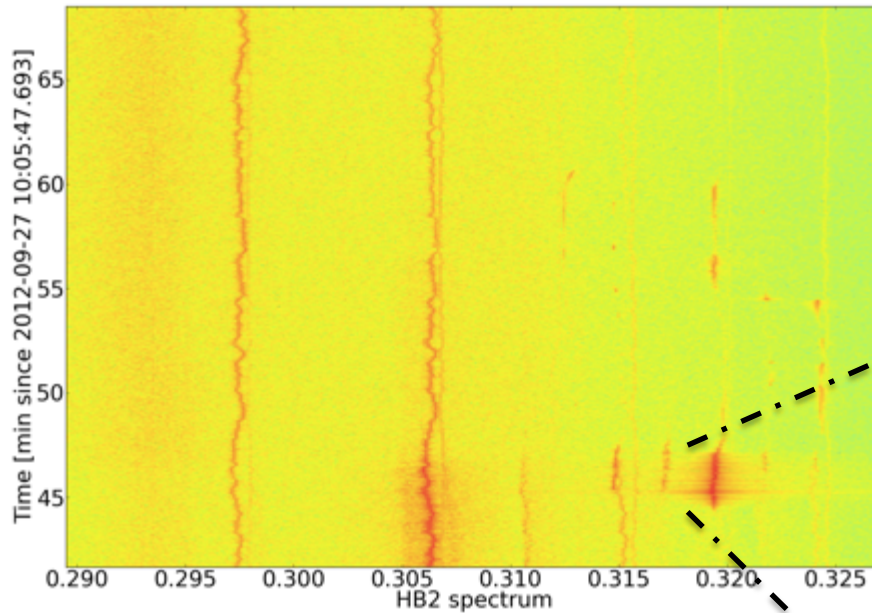
Octupoles trims and quads during Squeeze and Adjust
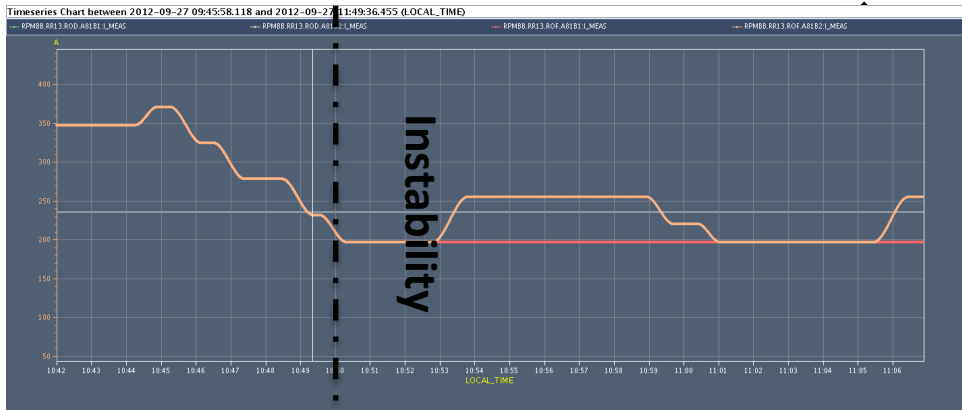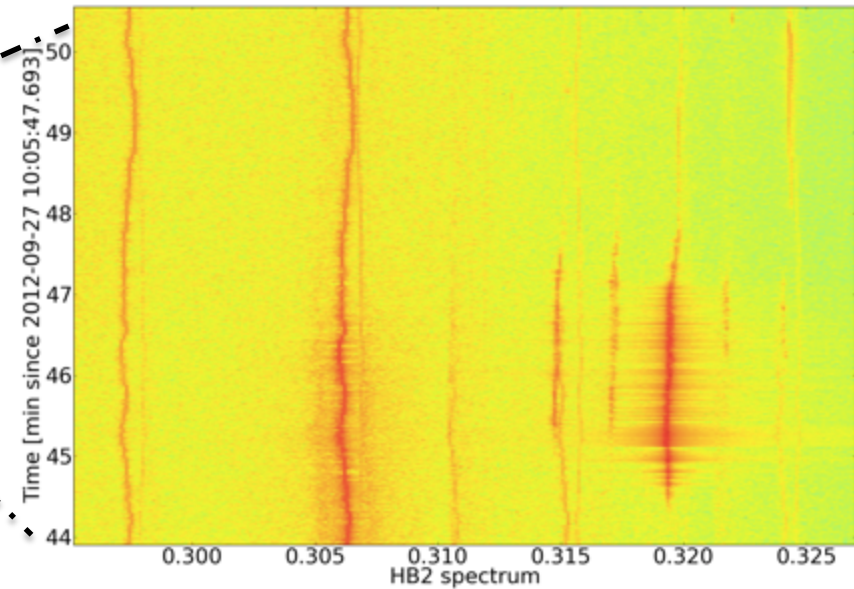
Adjust beam process (+/-650um)
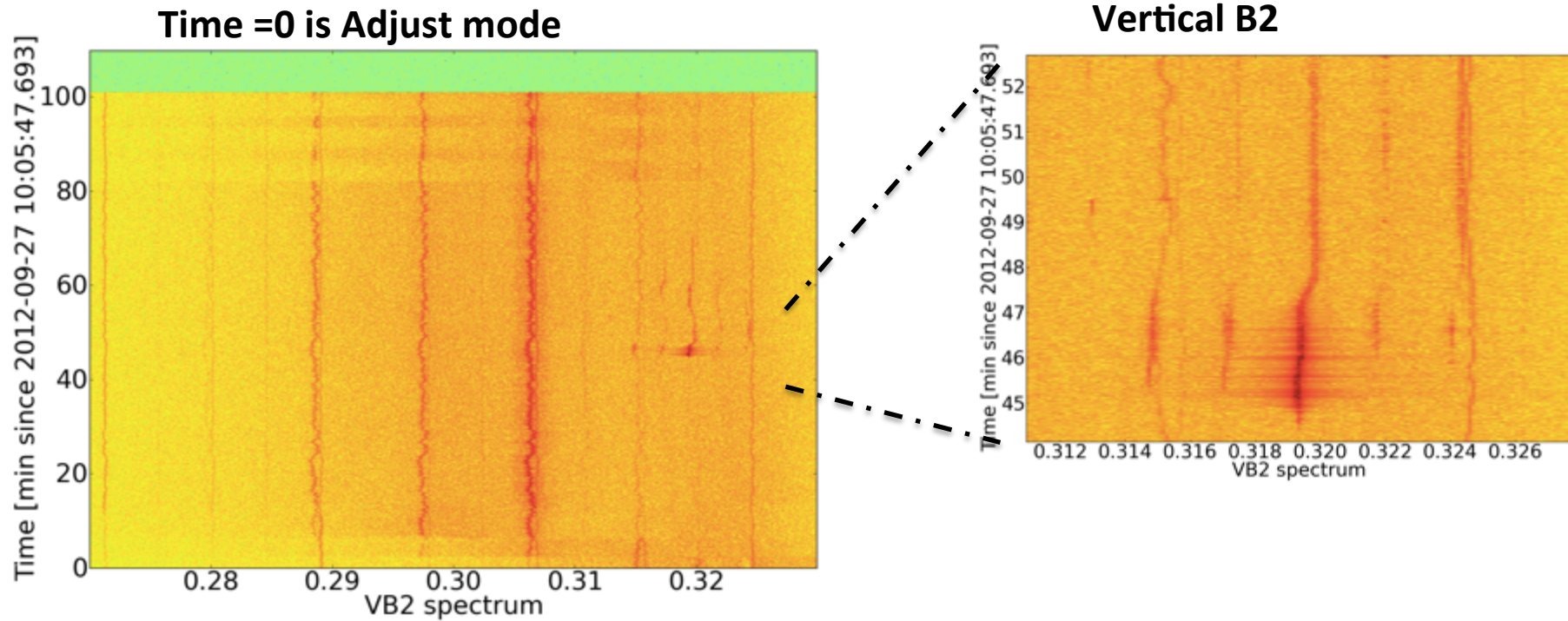
Fill 3102

Time =0 is Adjust mode

Horizontal B2

IP8 special bunches (separated 4s) of B2 get unstable while octupole current reduced when Collision beam process finished
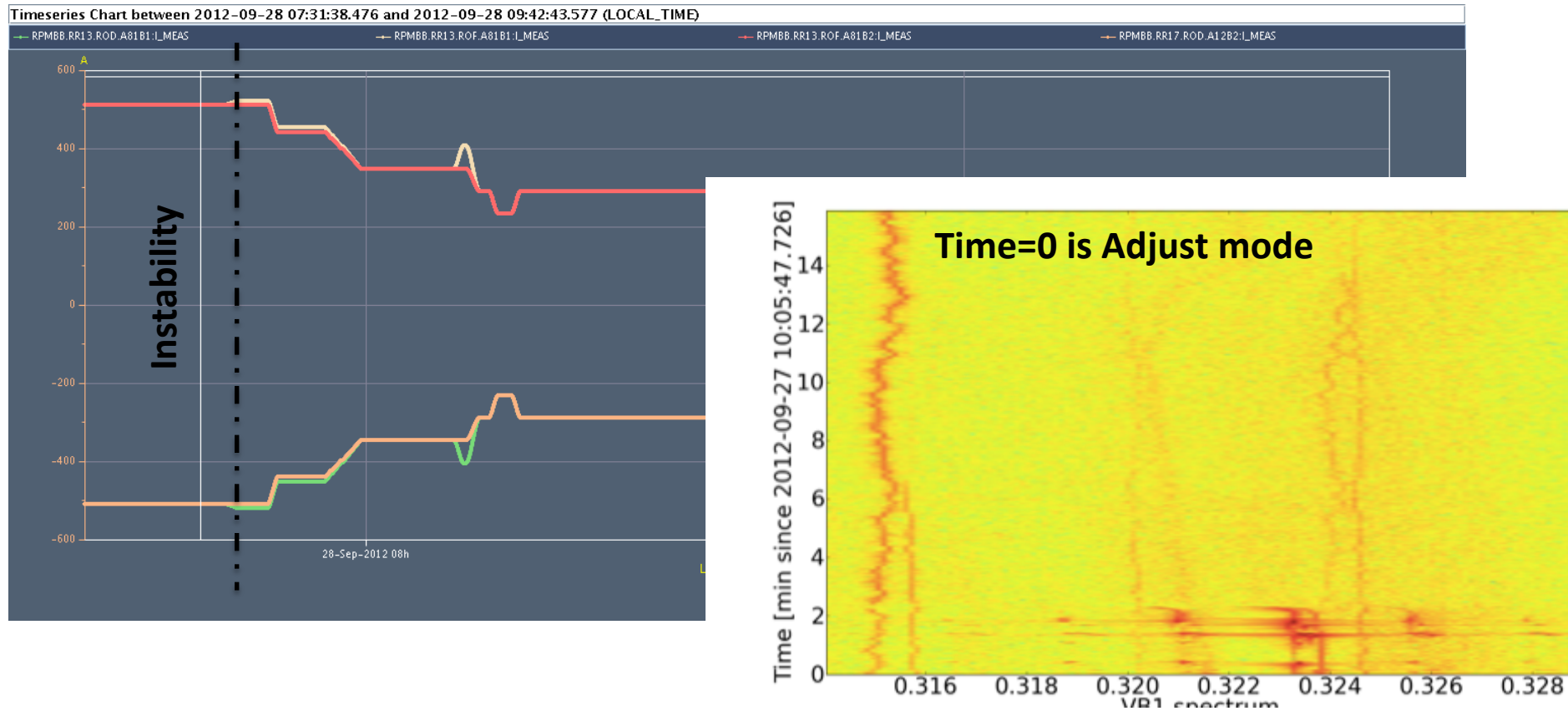Octupole current =240A to 200A   Damper gain = operational settings

Fill 3102

Time =0 is Adjust mode

Vertical B2

Triming back the octupoles at higher current mitigates the problem

Octupole current = around 200A

Fill 3102

Timeseries Chart between 2012-09-28 07:31:38.476 and 2012-09-28 09:42:43.577 (LOCAL_TIME)

— RPMBB.RR13.ROD.A81B1:I_MEAS   — RPMBB.RR13.ROF.A81B1:I_MEAS   — RPMBB.RR13.ROF.A81B2:I_MEAS   — RPMBB.RR17.ROD.A12B2:I_MEAS

Instability

28-Sep-2012 08h

Time=0 is Adjust mode
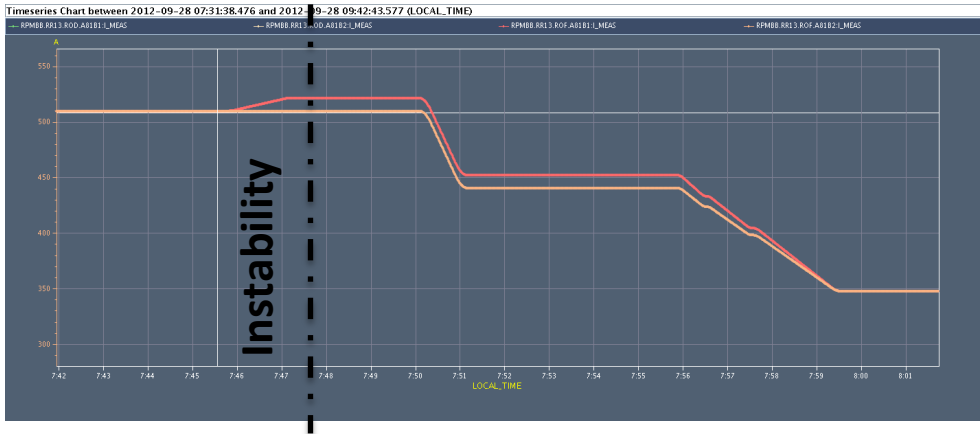
In Adjust beam process usual signature of instability cured by faster collapse of IP1 and IP5

Octupole current = B1 from 510A to 520A   Damper gain = operational settings

Fill 3108

Timeseries Chart between 2012-09-28 07:31:38.476 and 2012-09-28 09:42:43.577 (LOCAL_TIME)
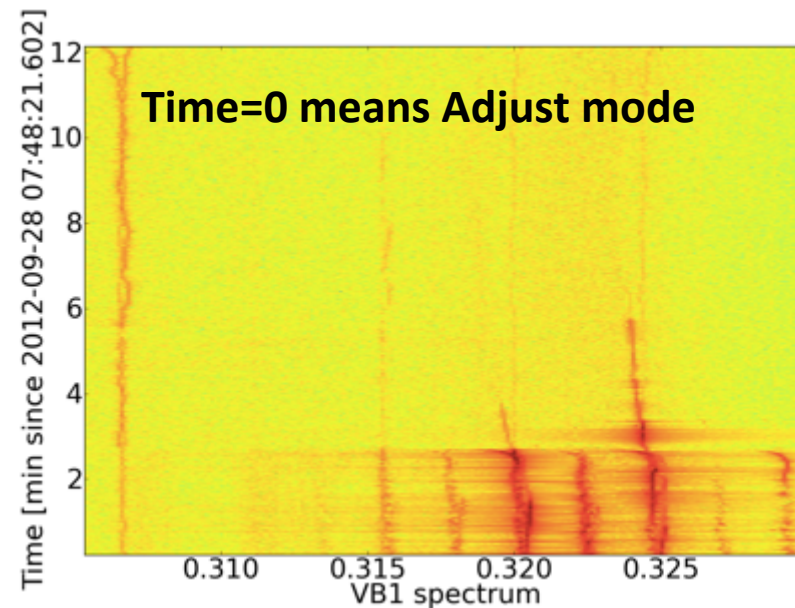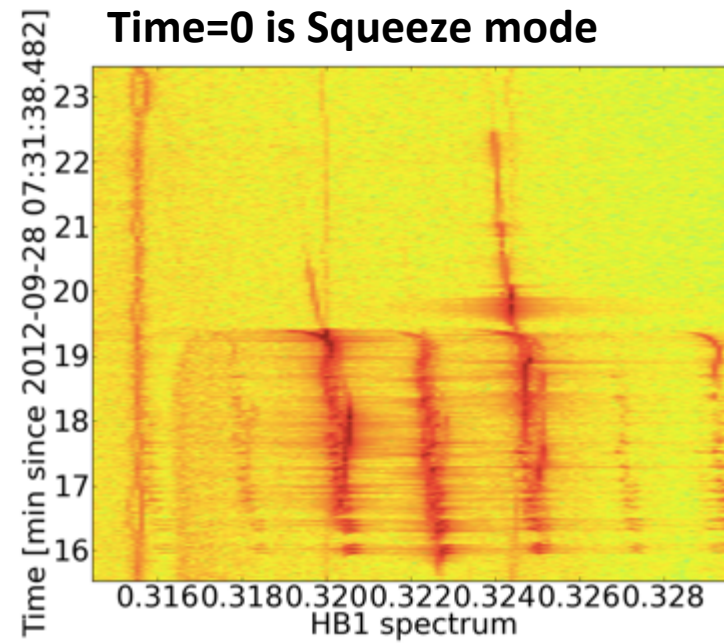
Instability

Again in Adjust usual signature of instability in V plane B1 cured by fast collapse of IP1 and IP5

Octupole current = from 510 to 520 B1
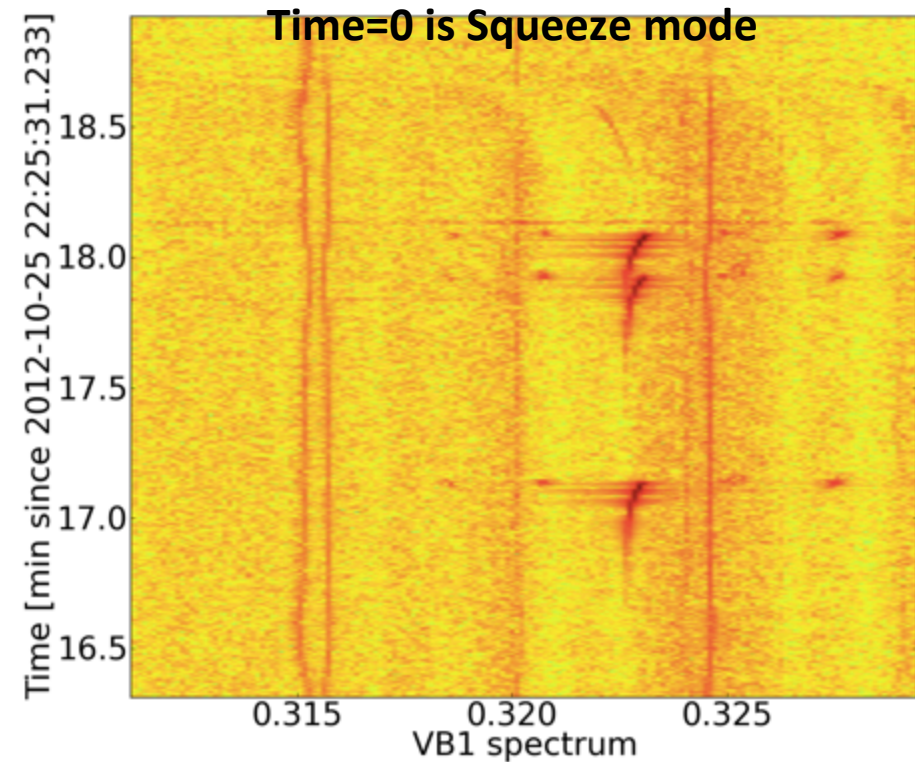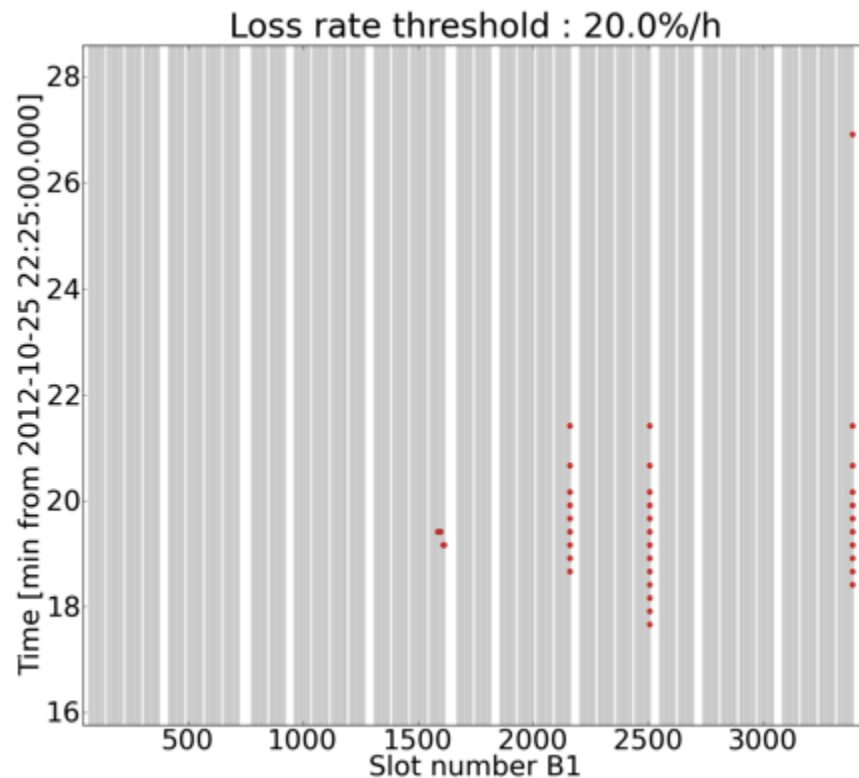Damper gain = operational settings

Time=0 is Squeeze mode

HB1 spectrum

Time=0 means Adjust mode

HB1 spectrum

Time=0 means Adjust mode

VB1 spectrum
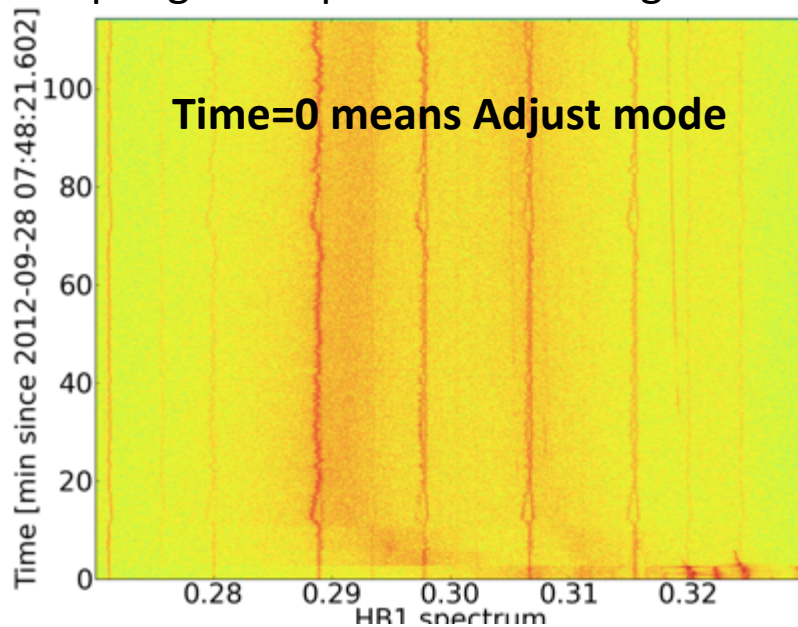
Fill 3223

Again end of squeeze (min 16) usual signature of instability in V plane B1 cured by fast collapse of IP1 and IP5

Octupole current = from 510 to 520 B1
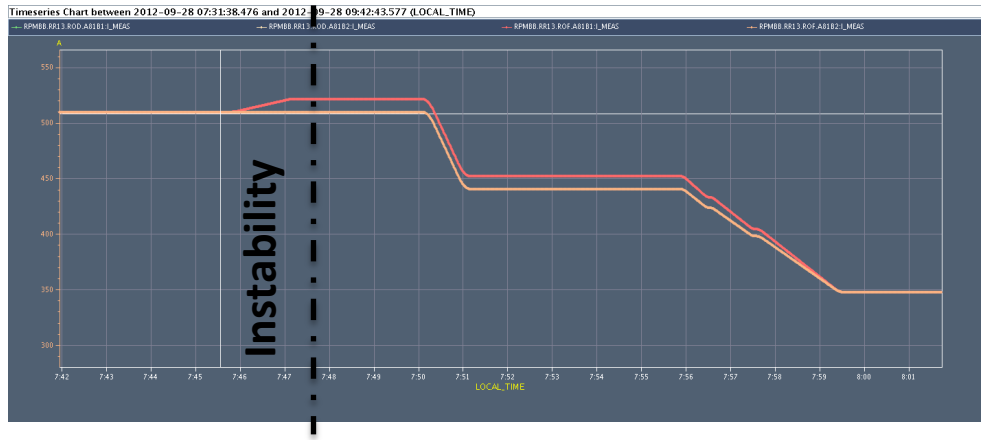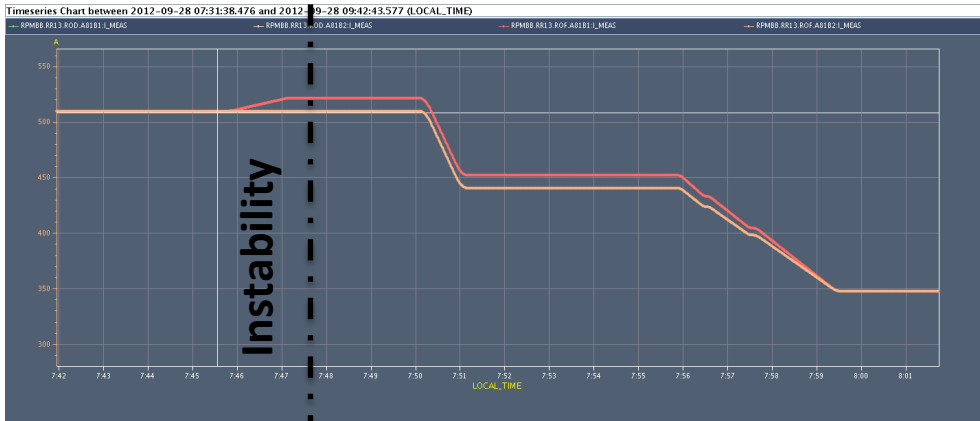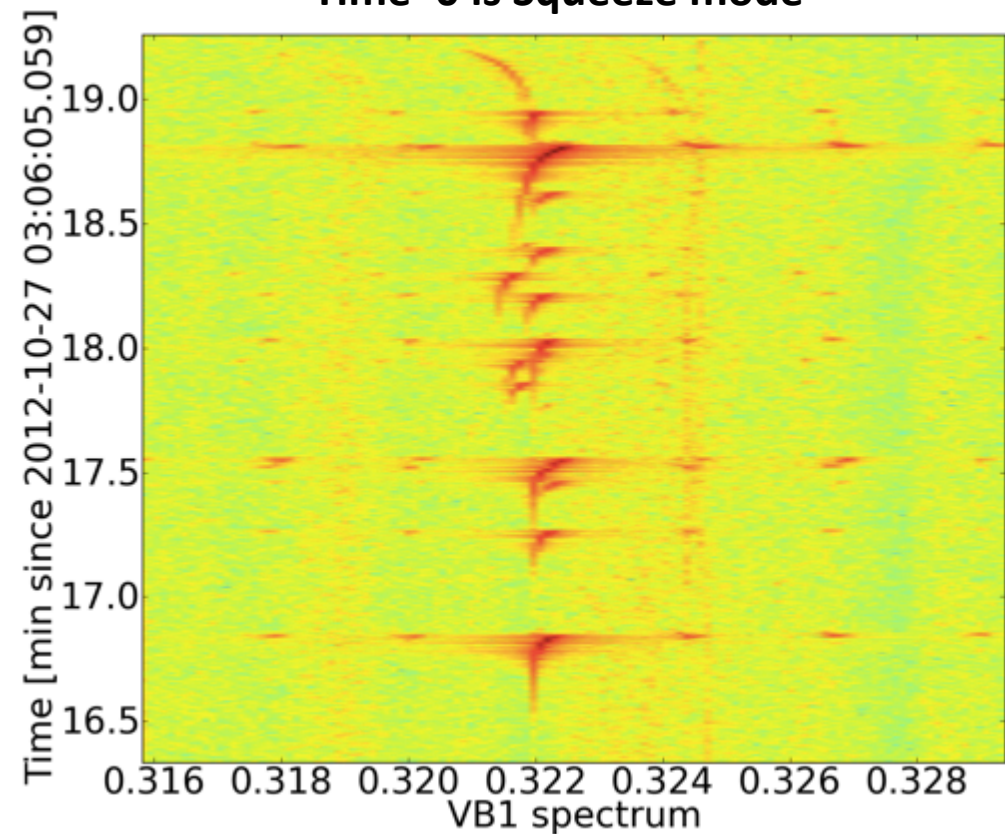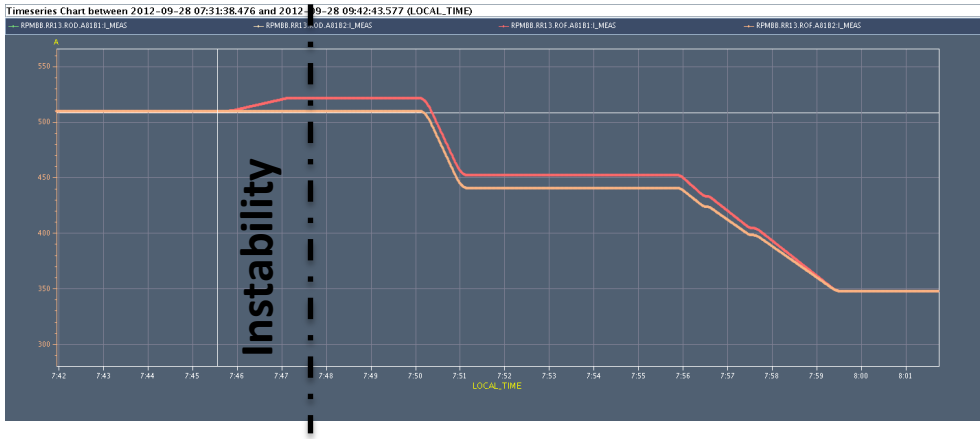Damper gain = operational settings

Fill 3229

Again end of squeeze (minute 16) usual signature of instability in V plane B1 cured by fast collapse of IP1 and IP5

Octupole current = from 510 to 520 B1
Damper gain = operational settings
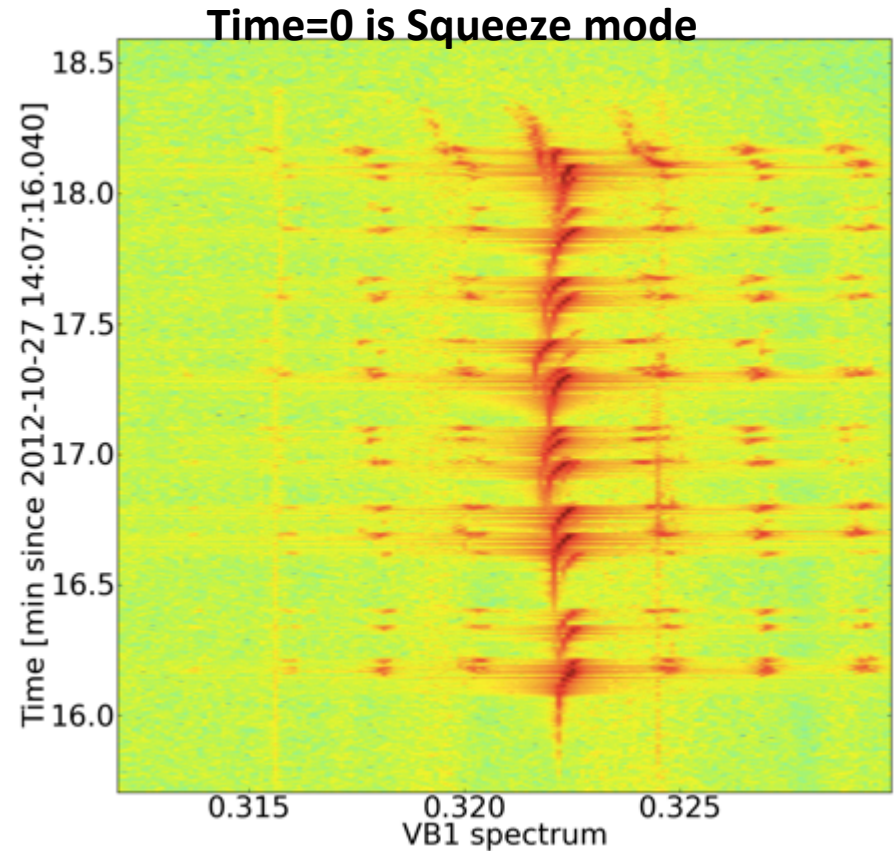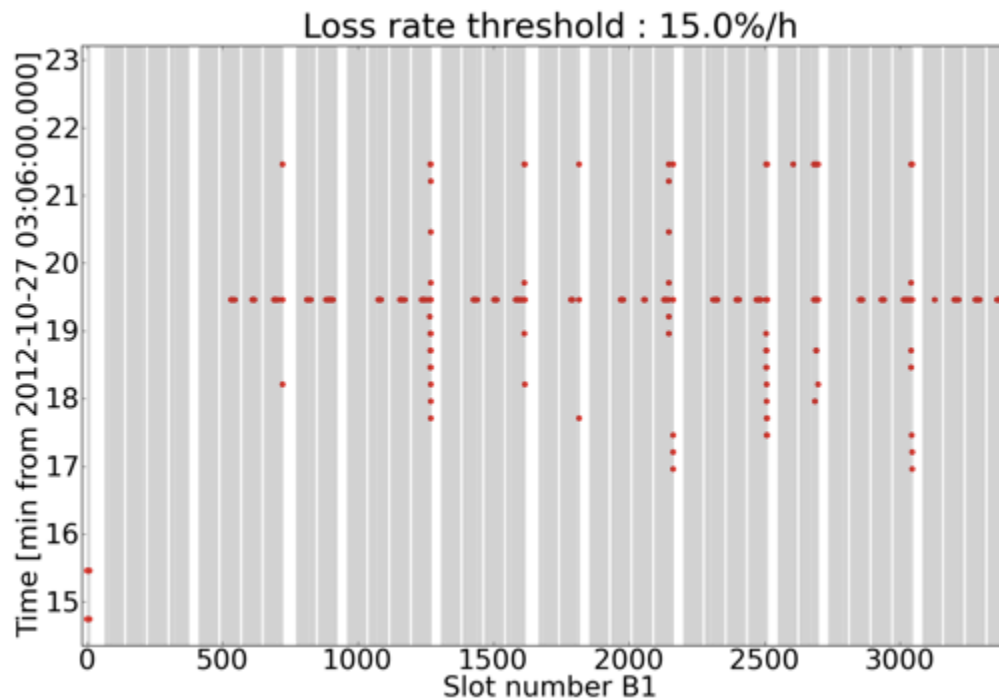
Time=0 is Squeeze mode

Fill 3231

Again end of squeeze (min 16) usual signature of instability in V plane B1 cured by fast collapse of IP1 and IP5

Octupole current = from 520 A B1
Damper gain = operational settings

Time=0 is Squeeze mode

Fill 3236

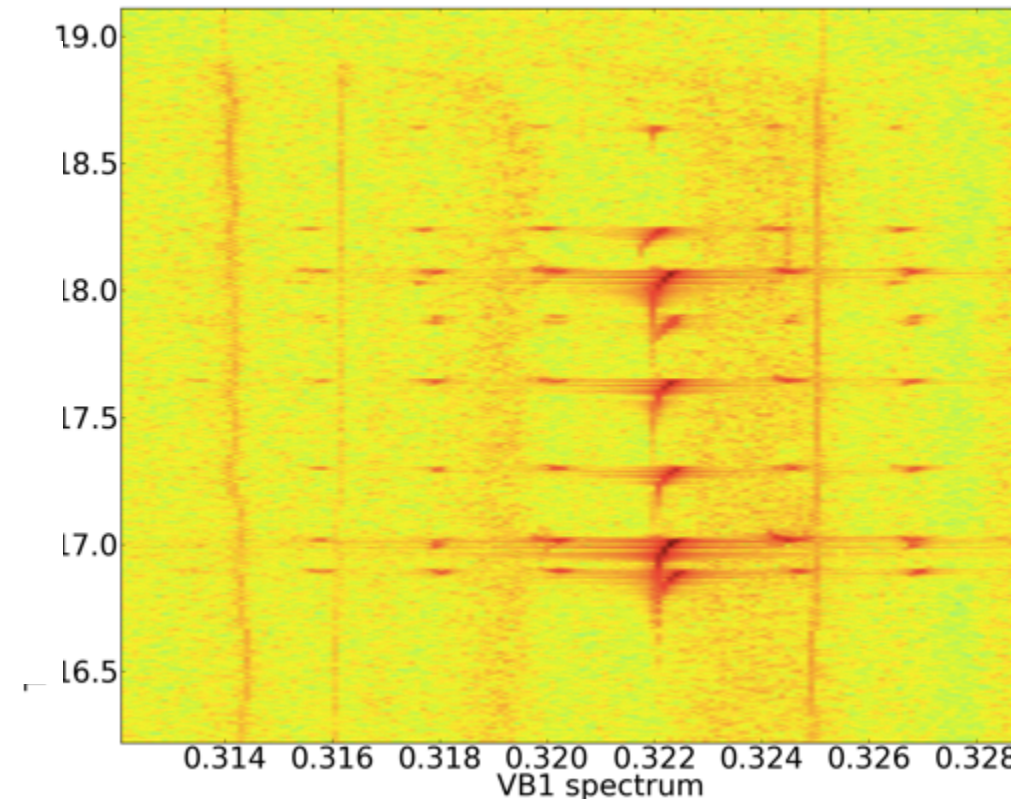Again end of squeeze (min 16) usual signature of instability in V plane B1 cured by fast collapse of IP1 and IP5

Octupole current =520 A
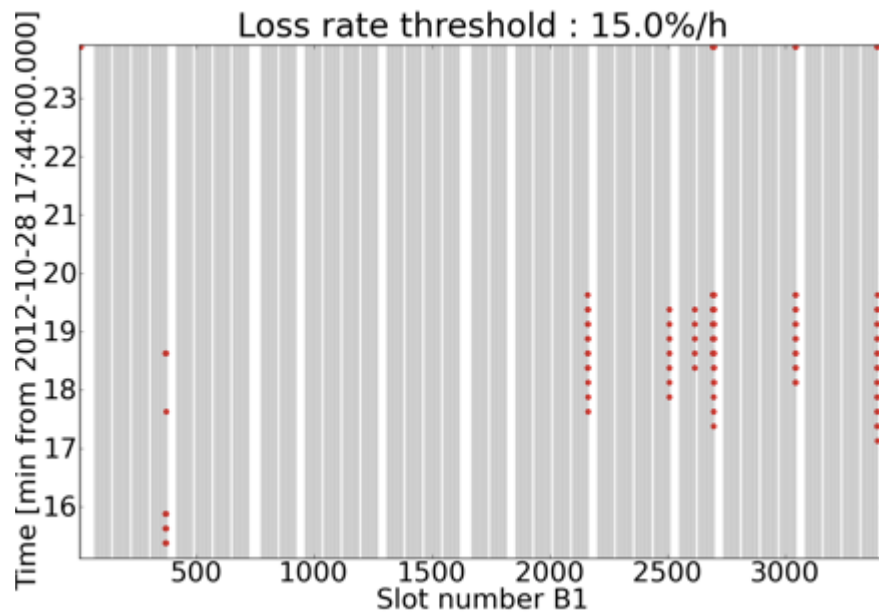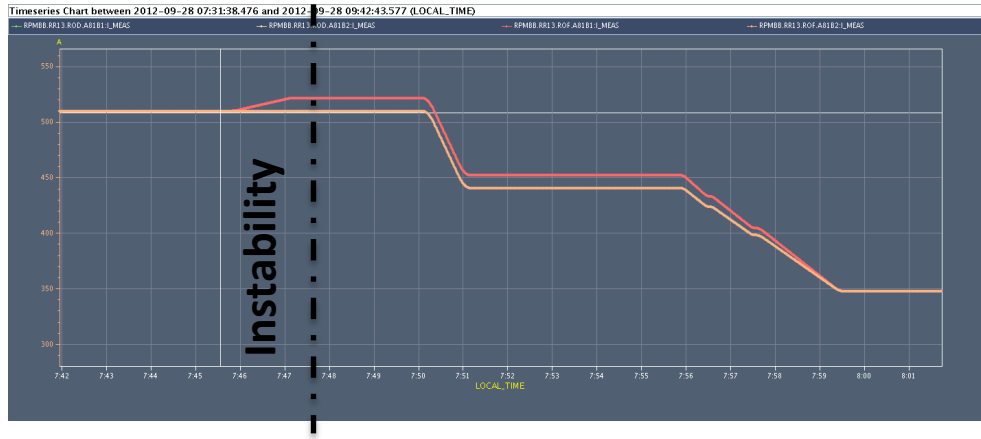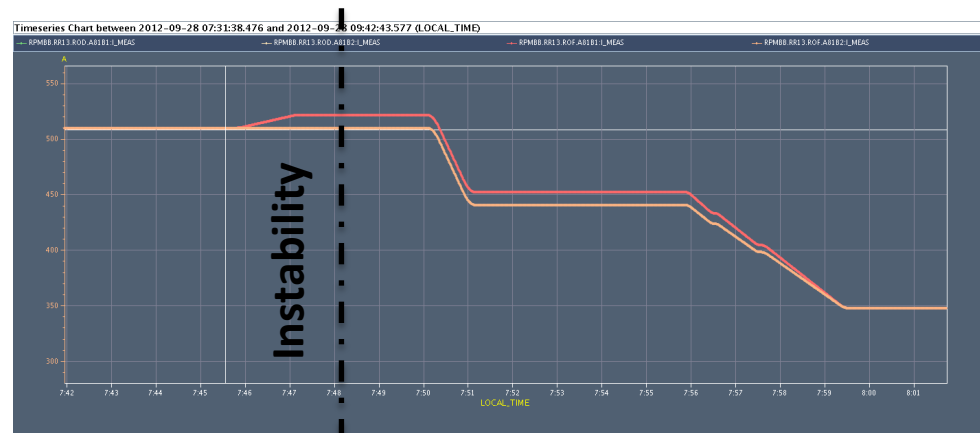
Damper gain = operational settings

RFVoltage = 12MV to 10MV and bunch length increased 0.6 ps

Time=0 is Squeeze mode

Summary

Instabilities develop always at end of squeeze (min 16) always B1 Vertical usual signature of instability in V plane B1 cured by fast collapse of IP1 and IP5 - **faster BP helps!**

Same bunches along the train seems to be involved tails of trains (last two or last but two) but still analyzing.....