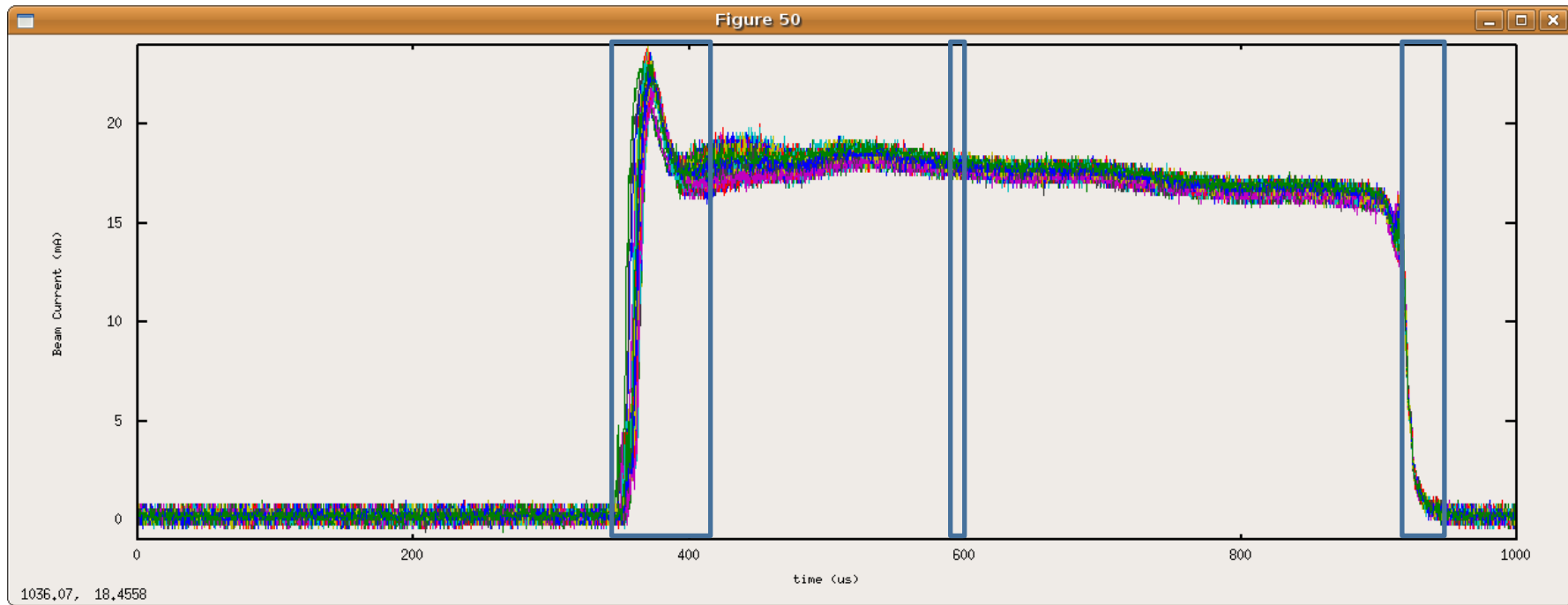


From the source what can be done to remove the head, middle end, or all of the beam?

R Scrivens, 2009-12-07



A

B

C

A: Beam Head

B: Cutting the beam inside the pulse

C: Tail

D: Remove the beam completely

A: Beam Head

The longer rise time of the beam from the source, and some space charge compensation, will be chopped by the pre-chopper.

A timing (NX.STOPPCHOP) switches off the chopper (i.e. starts beam passage). Timing can be started relative to a PSB injection warning.

~3 μ s is needed for the chopper to switch off, and the beam to propagate.

Longer (est. 30 μ s) is needed for space-charge compensation to re-establish at the new position.

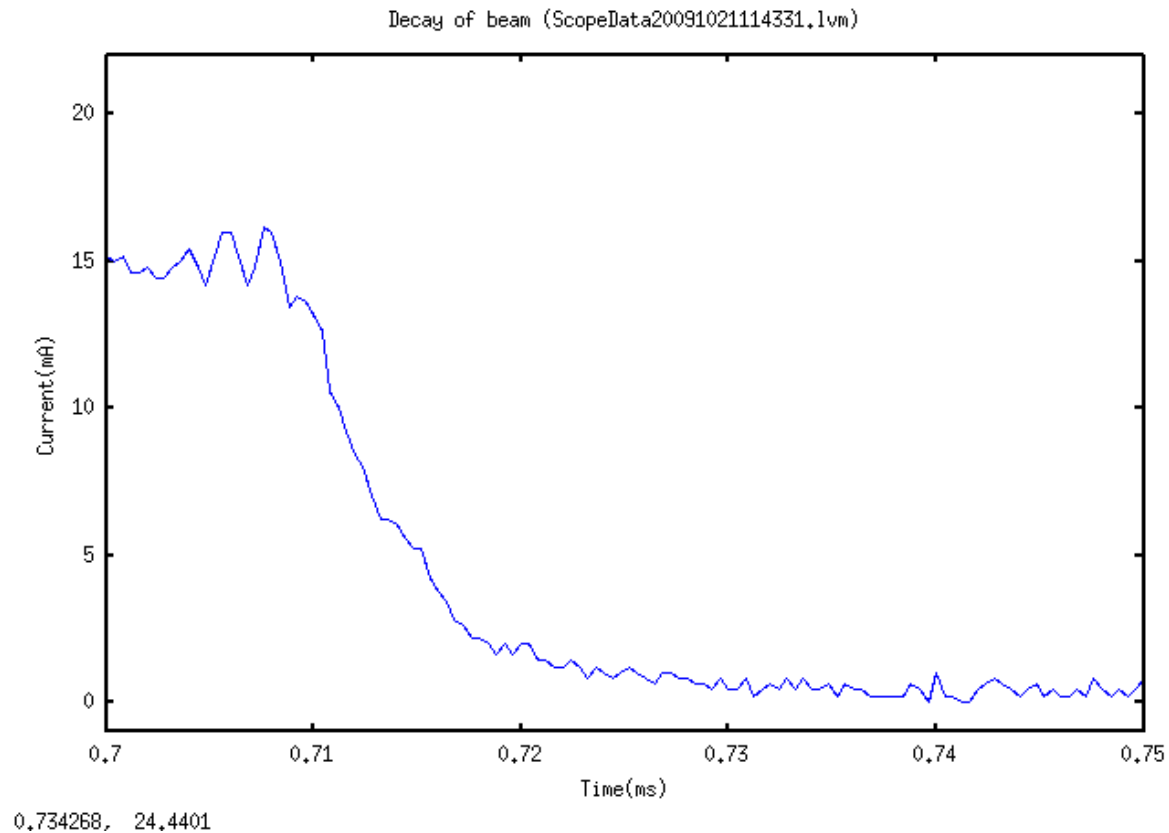


LTIM	Pulse	Delay	Train
NX.WZMS	Enable	80000	10MHz
NX.STARTGAS	Enable	86700	10MHz
NX.STARTIGN	Enable	93350	10MHz
NX.STOPIGN	Enable	400	10MHz
NX.SEJ	Enable	100000	10MHz
NX.STARTPCHOP	Enable	93500	10MHz
NX.STOPPCHOP	Enable	2000	10MHz
NX.RRFON	Enable	92000	10MHz
NX.FWSRCRF	Disable	97000	10MHz

B: Cutting the beam inside the pulse

Using the source: The beam fall time from the source appears to be $\sim 10\mu\text{s}$, so too long. (Do not know if we can re-ignite the source again easily).

Using the pre-chopper: Chopping could be about $2\mu\text{s}$ (is this fast enough), and return to beam slow (again SCC).



C: Tail

Using the pre-chopper. A timing, NX.STARTCHOP, is used to switch off the beam (fall time of about 2us).

We do not know what the extinction ratio with beam.

Delay time to switch off the RF can be tested.

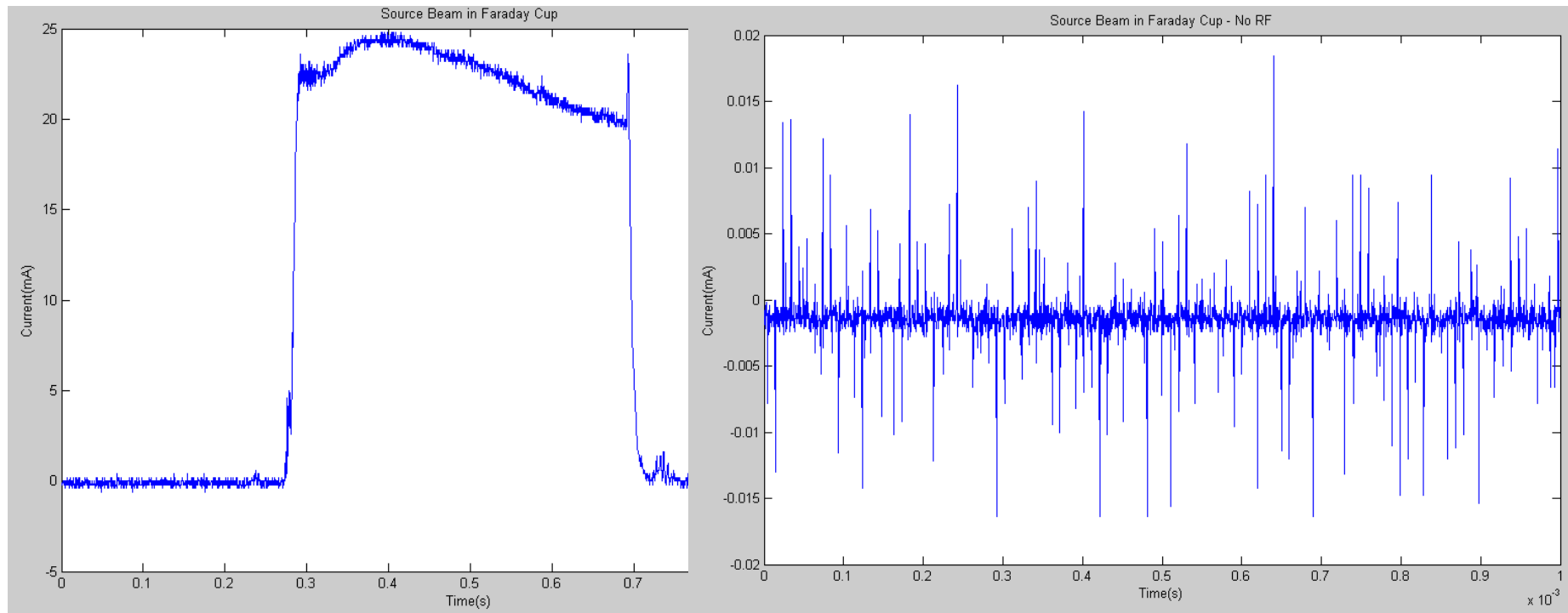
D: Remove the beam completely

There is an interlock from the source to the 2MHz RF.

Mauro needs to confirm what it acts on, and the reaction time.

Tests made on the extinction ratio of the source with this interlock acting.

There is less than 2uA of beam.



Summary

A: Beam Head

B: Cutting the beam inside the pulse
Not possible with the source / pre-chopper.

C: Tail (stopping the beam early)
With the pre-chopper, about 2us will be possible (tail to be measured)
This needs a new pre-chopper driver.
Reaction time to be confirmed, <5us should be possible.

D: Remove the beam completely
OK – warning needs to be confirmed.