



# Collimator Analysis Program Tool

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# Outlines

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- ❖ What's the Collimation Analysis Program (CAP) tool?
- ❖ How does it work?
- ❖ Future developments

# What's the CAP tool?

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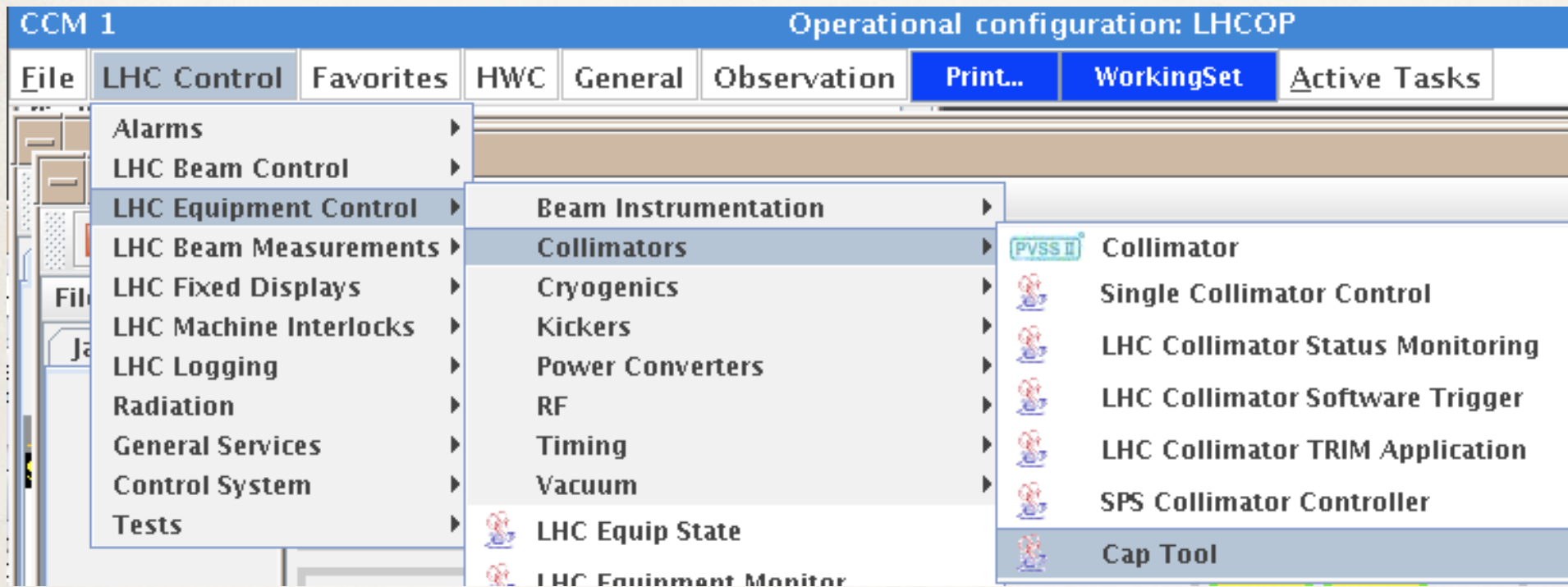
The Cap Tool is a JAVA software for fast data analysis during commissioning (with/without beam) and operation of the LHC collimation system.

1) Online version (available in the LHC control panel from the CCC): reads last 25 hours data (see D.Wollmann talk 07/07/09 CWG) which are stored locally.

2) Offline version (to be released): reads data from our data storage (macbe12138.cern.ch, "daily data" see D.Wollmann talk 07/07/09 CWG).

# The CAP Tool

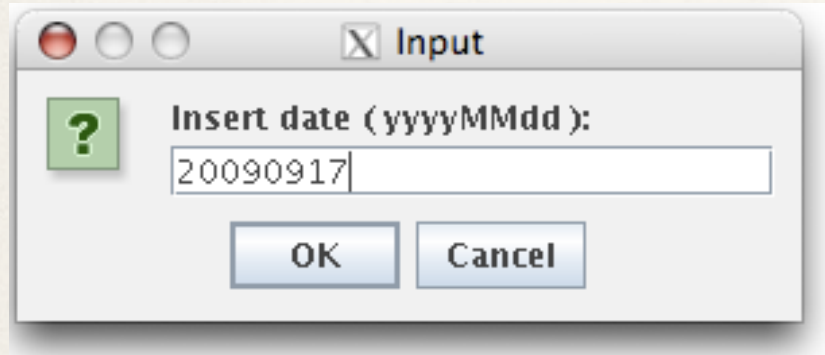
How to access the CAP tool from the CCC



or via Web at the link: <http://abwww/ap/dist/lhc/lhc-collimators-cap/PRO/>  
by selecting [lhc-collimators-cap.jnlp](http://abwww/ap/dist/lhc/lhc-collimators-cap/PRO/lhc-collimators-cap.jnlp)

# Data Selection

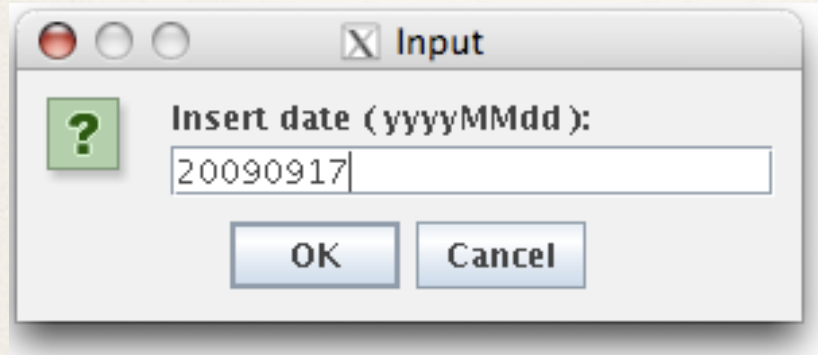
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Date of interest for data analysis:  
current day for online version  
(last 25 hours)

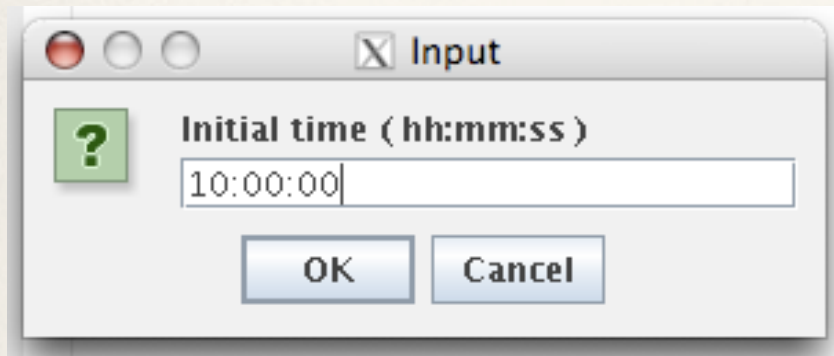
# Data Selection

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Input dialog box titled "Input" with a question mark icon. The prompt is "Insert date (yyyyMMdd):". The input field contains "20090917". There are "OK" and "Cancel" buttons.

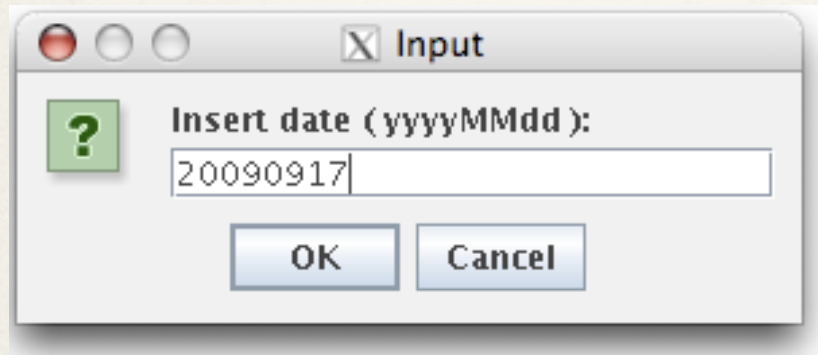
Date of interest for data analysis:  
current day for online version  
(last 25 hours)



Input dialog box titled "Input" with a question mark icon. The prompt is "Initial time (hh:mm:ss)". The input field contains "10:00:00". There are "OK" and "Cancel" buttons.

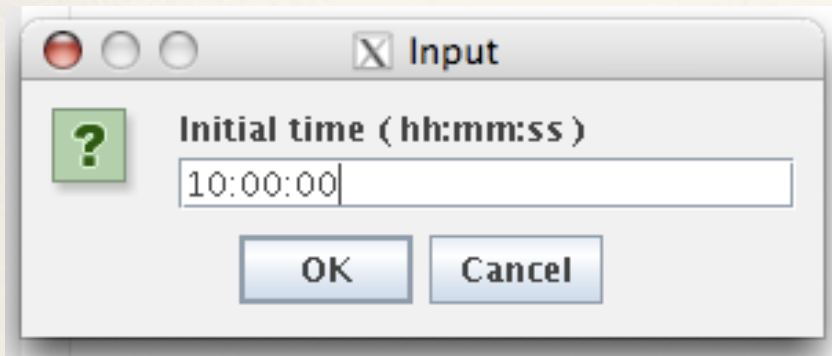
# Data Selection

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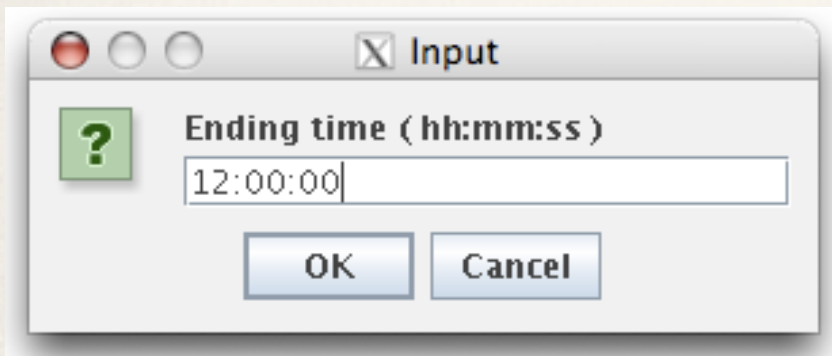


Input dialog box titled "Input" with a question mark icon. The prompt is "Insert date (yyyyMMdd):". The input field contains the date "20090917". There are "OK" and "Cancel" buttons at the bottom.

Date of interest for data analysis:  
current day for online version  
(last 25 hours)



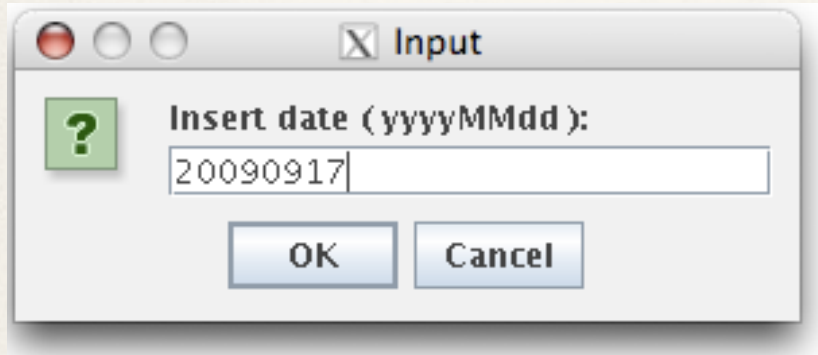
Input dialog box titled "Input" with a question mark icon. The prompt is "Initial time (hh:mm:ss)". The input field contains the time "10:00:00". There are "OK" and "Cancel" buttons at the bottom.



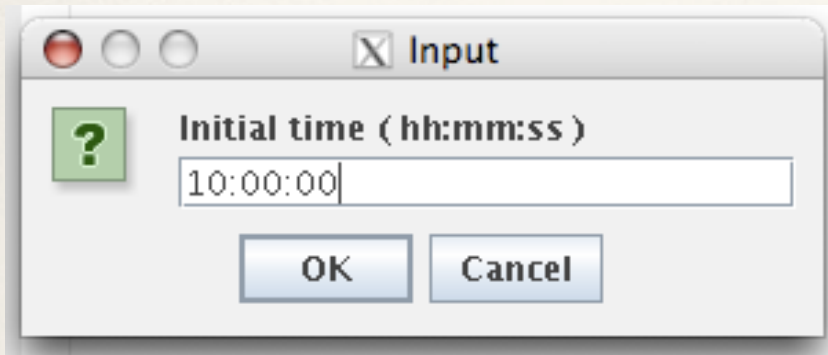
Input dialog box titled "Input" with a question mark icon. The prompt is "Ending time (hh:mm:ss)". The input field contains the time "12:00:00". There are "OK" and "Cancel" buttons at the bottom.

# Data Selection

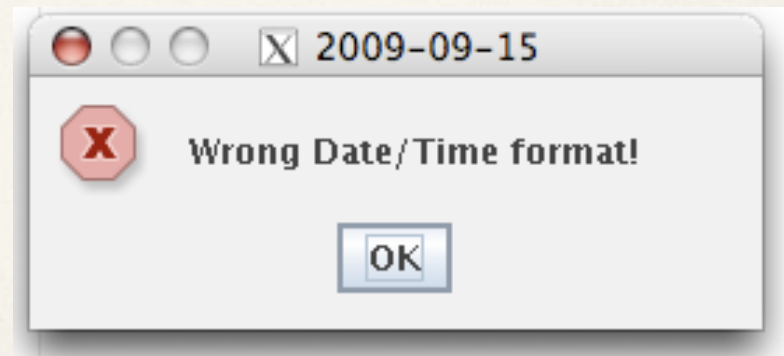
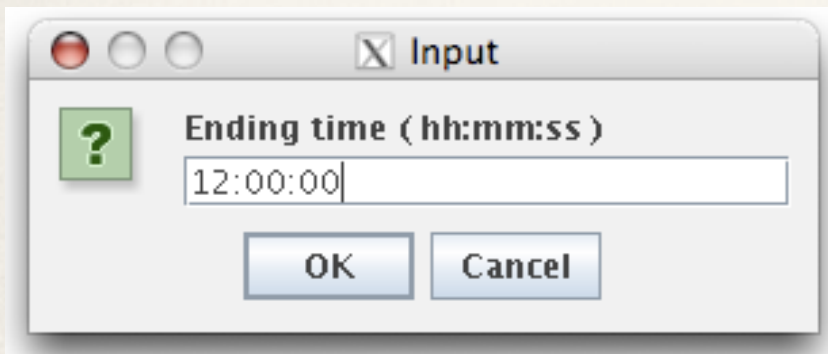
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Date of interest for data analysis:  
current day for online version  
(last 25 hours)



Indicated Date and Time  
format must be respected  
otherwise:

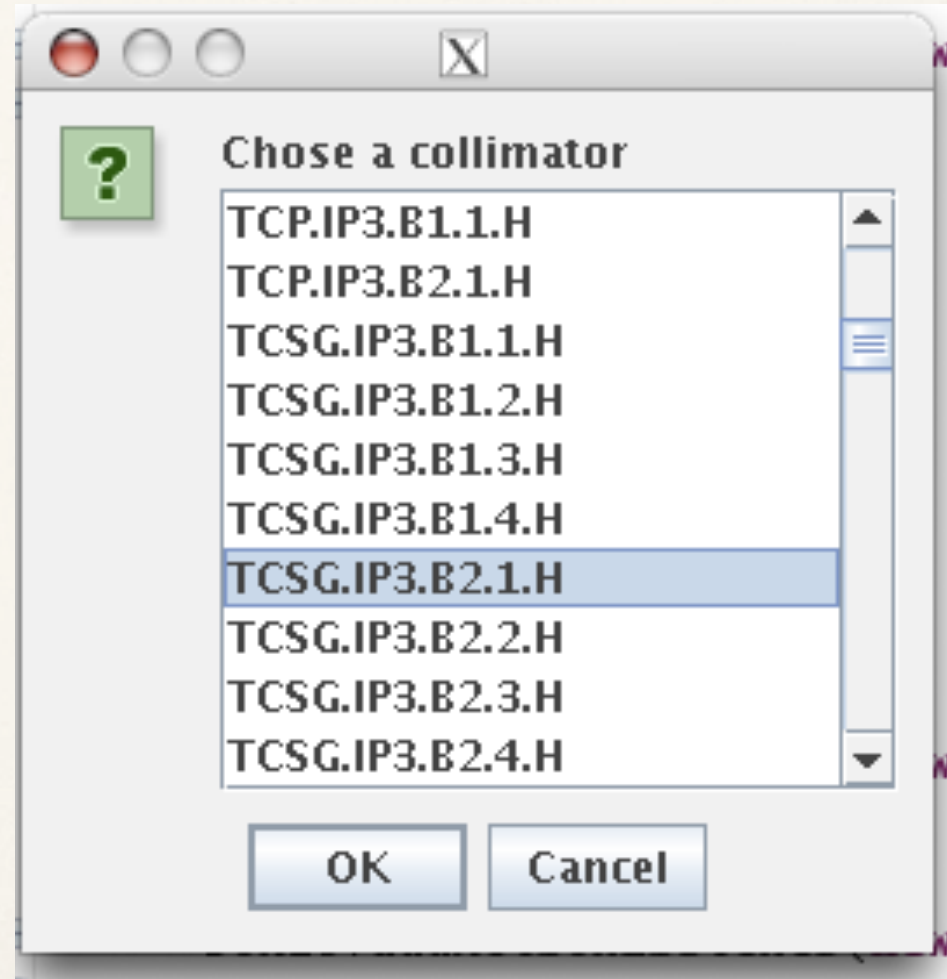




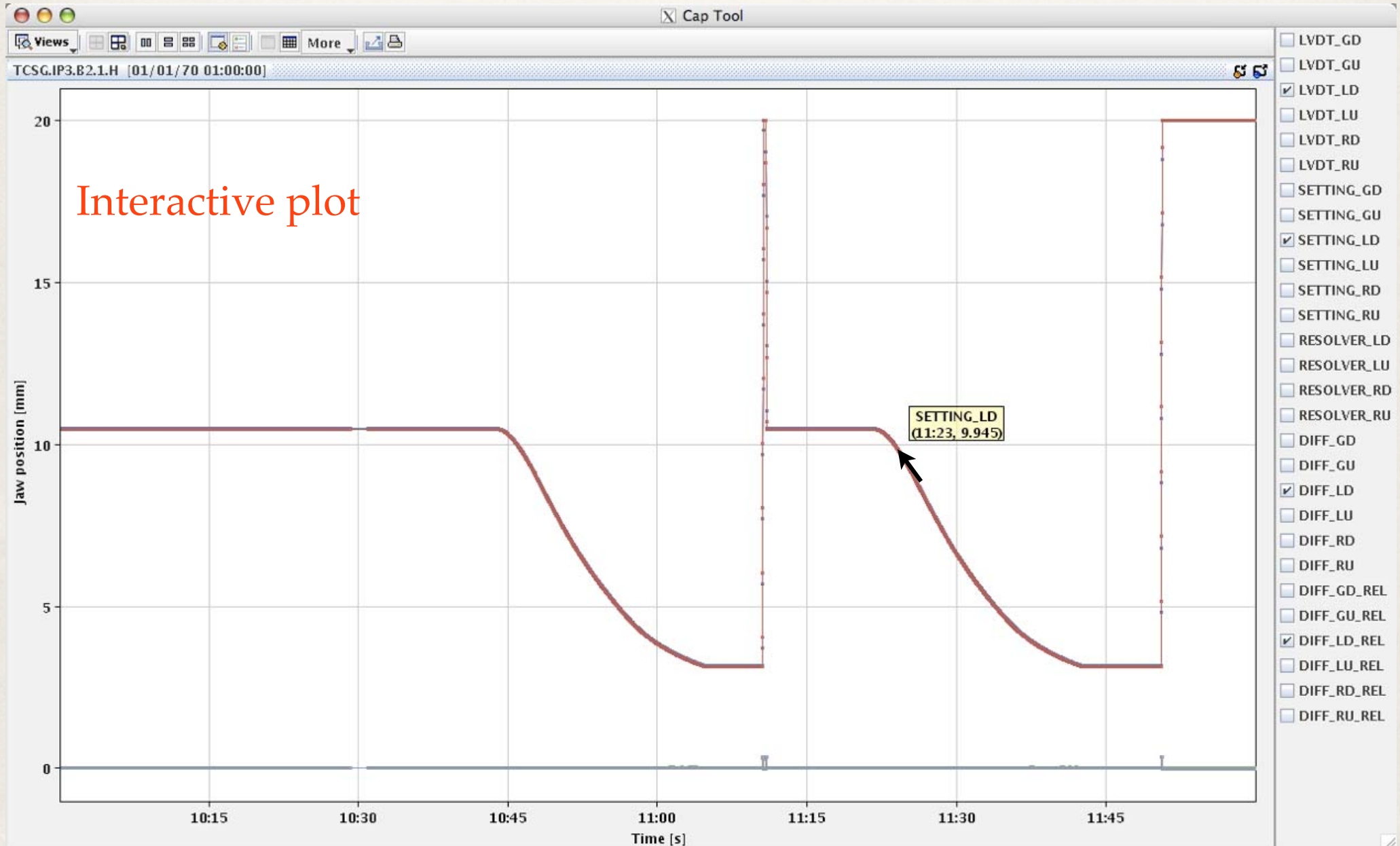
# First Options for Data Analysis

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Select a single collimator.



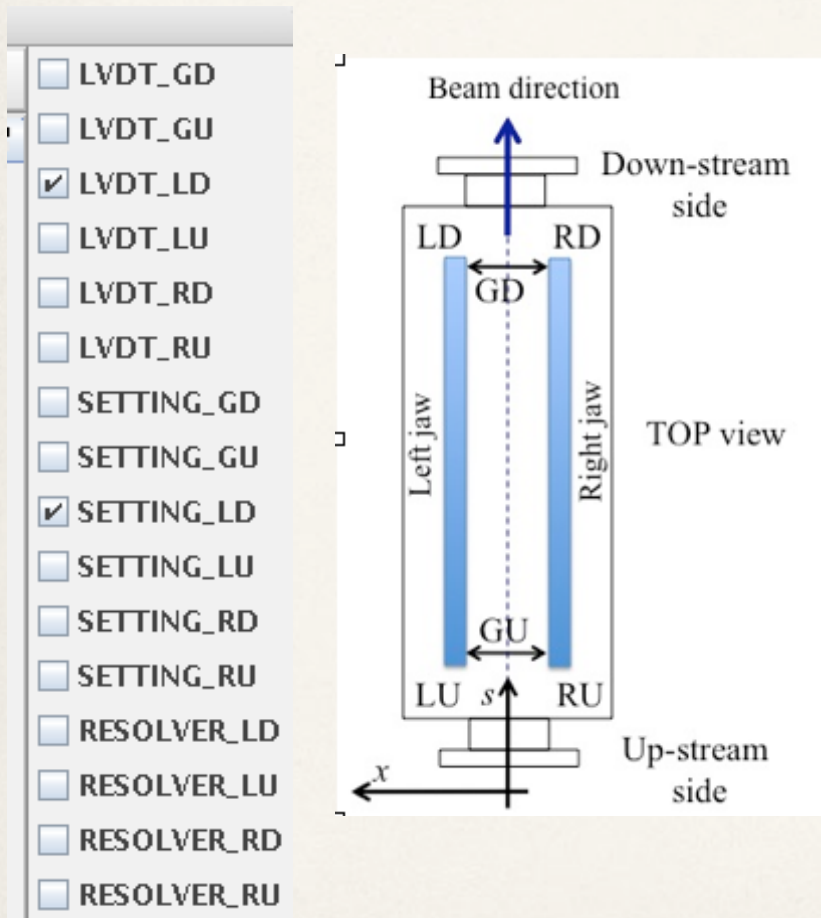
# Single Collimator



# Plot Legend

Position sensors according to standard collimator frame:

“Quality and stability of the signals”



- LVDT\_GD
- LVDT\_GU
- LVDT\_LD
- LVDT\_LU
- LVDT\_RD
- LVDT\_RU
- SETTING\_GD
- SETTING\_GU
- SETTING\_LD
- SETTING\_LU
- SETTING\_RD
- SETTING\_RU
- RESOLVER\_LD
- RESOLVER\_LU
- RESOLVER\_RD
- RESOLVER\_RU

- DIFF\_GD
- DIFF\_GU
- DIFF\_LD
- DIFF\_LU
- DIFF\_RD
- DIFF\_RU
- DIFF\_GD\_REL
- DIFF\_GU\_REL
- DIFF\_LD\_REL
- DIFF\_LU\_REL
- DIFF\_RD\_REL
- DIFF\_RU\_REL

Difference between settings and positions (LVDT)

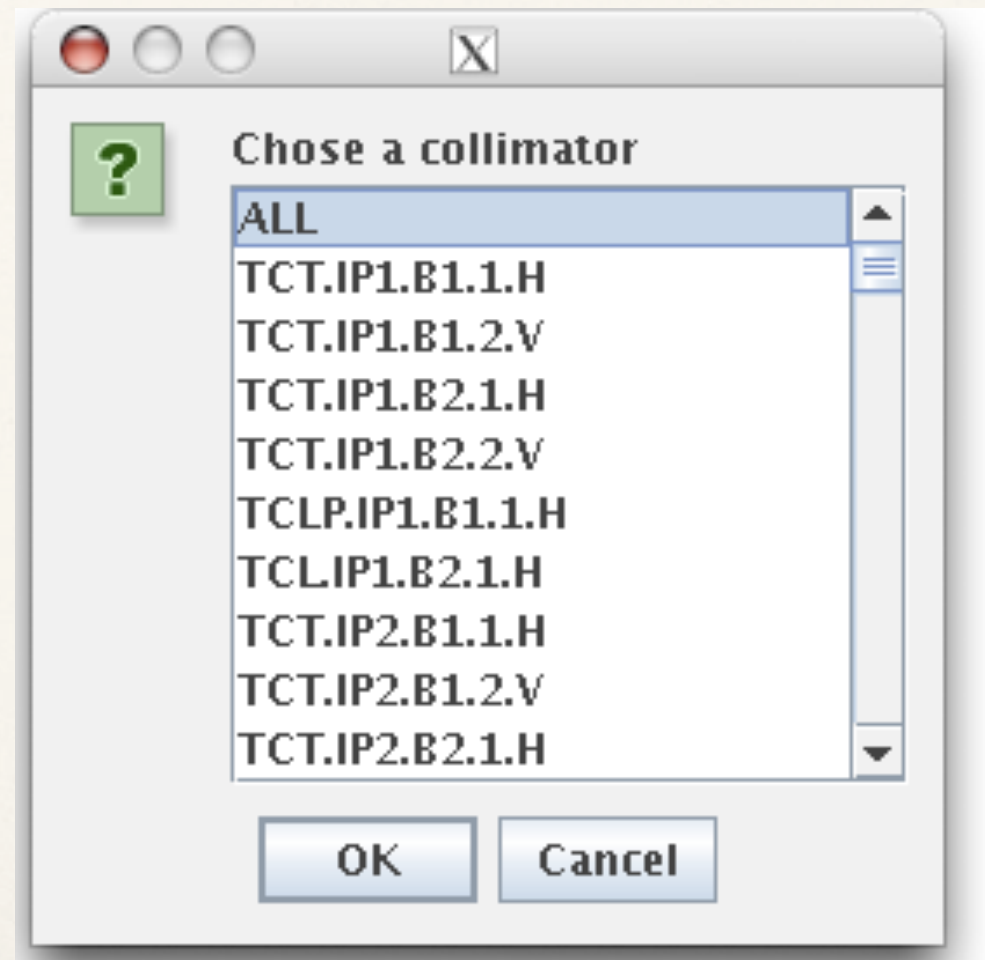
Relative difference between settings and positions with respect to initial point

Settings  $\equiv$  motor steps

# Options for Data Analysis

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Select all collimators.



# Main Panel

Limit Status						
TCT.IP1.B1.1.H	TCT.IP1.B1.2.V	TCT.IP1.B2.1.H	TCT.IP1.B2.2.V	TCLP.IP1.B1.1.H	TCL.IP1.B2.1.H	TCT.IP2.B1.1.H
TCT.IP2.B1.2.V	TCT.IP2.B2.1.H	TCT.IP2.B2.2.V	TCDD.IP2.B1.1.H	TDI.IP2.B1.1.H	TCLI.IP2.B1.1.H	TCLLIP2.B1.2.H
TCP.IP3.B1.1.H	TCP.IP3.B2.1.H	TCSG.IP3.B1.1.H	TCSG.IP3.B1.2.H	TCSG.IP3.B1.3.H	TCSG.IP3.B1.4.H	TCSG.IP3.B2.1.H
TCSG.IP3.B2.2.H	TCSG.IP3.B2.3.H	TCSG.IP3.B2.4.H	TCLAG.IP3.B1.1.V	TCLAG.IP3.B1.2.H	TCLAG.IP3.B1.3.H	TCLAG.IP3.B1.4.H
TCLAG.IP3.B2.1.V	TCLAG.IP3.B2.2.H	TCLAG.IP3.B2.3.H	TCLAG.IP3.B2.4.H	TCT.IP5.B1.1.H	TCT.IP5.B1.2.V	TCT.IP5.B2.1.H
TCT.IP5.B2.2.V	TCLIP5.B1.1.H	TCLIP5.B2.1.H	TCSG.IP6.B1.1.H	TCSG.IP6.B2.1.H	TCDQ.IP6.B1.1.H	TCDQ.IP6.B2.1.H
TCP.IP7.B1.1.V	TCP.IP7.B1.2.H	TCP.IP7.B1.3.S	TCP.IP7.B2.1.V	TCP.IP7.B2.2.H	TCP.IP7.B2.3.S	TCSG.IP7.B1.10.S
TCSG.IP7.B1.11.H	TCSG.IP7.B1.1.S	TCSG.IP7.B1.2.S	TCSG.IP7.B1.3.S	TCSG.IP7.B1.4.V	TCSG.IP7.B1.5.H	TCSG.IP7.B1.6.S
TCSG.IP7.B1.7.S	TCSG.IP7.B1.8.S	TCSG.IP7.B1.9.S	TCSG.IP7.B2.10.S	TCSG.IP7.B2.11.H	TCSG.IP7.B2.1.S	TCSG.IP7.B2.2.S
TCSG.IP7.B2.3.S	TCSG.IP7.B2.4.V	TCSG.IP7.B2.5.H	TCSG.IP7.B2.6.S	TCSG.IP7.B2.7.S	TCSG.IP7.B2.8.S	TCSG.IP7.B2.9.S
TCLA.IP7.B1.1.V	TCLA.IP7.B1.2.H	TCLA.IP7.B1.3.V	TCLA.IP7.B1.4.H	TCLA.IP7.B1.5.H	TCLA.IP7.B2.1.V	TCLA.IP7.B2.2.H
TCLA.IP7.B2.3.V	TCLA.IP7.B2.4.H	TCLA.IP7.B2.5.H	TCT.IP8.B1.1.H	TCT.IP8.B1.2.V	TCT.IP8.B2.1.H	TCT.IP8.B2.2.V
TCLI.IP8.B2.1.H	TCLI.IP8.B2.2.H	TDI.IP8.B2.1.H	TCDI.TI2.B1.1.H	TCDI.TI2.B1.2.V	TCDI.TI2.B1.3.H	TCDI.TI2.B1.4.H
TCDI.TI2.B1.5.V	TCDI.TI2.B1.6.H	TCDI.TI2.B1.7.V	TCDI.TI8.B2.1.H	TCDI.TI8.B2.2.V	TCDI.TI8.B2.3.V	TCDI.TI8.B2.4.H
TCDI.TI8.B2.5.H	TCDI.TI8.B2.6.V	OK				

# Main Panel

Limit Status

TCT.IP1.B1.1.H	TCT.IP1.B1.2.V	TCT.IP1.B2.1.H	TCT.IP1.B2.2.V	TCLP.IP1.B1.1.H	TCL.IP1.B2.1.H	TCT.IP2.B1.1.H
TCT.IP2.B1.2.V	TCT.IP2.B2.1.H	TCT.IP2.B2.2.V	TCDD.IP2.B1.1.H	<b>TDI.IP2.B1.1.H</b>	TCLI.IP2.B1.1.H	TCLLIP2.B1.2.H
TCP.IP3.B1.1.H	TCP.IP3.B2.1.H	TCSG.IP3.B1.1.H	TCSG.IP3.B1.2.H	TCSG.IP3.B1.3.H	TCSG.IP3.B1.4.H	TCSG.IP3.B2.1.H
<b>TCSG.IP3.B2.2.H</b>	TCSG.IP3.B2.3.H	TCSG.IP3.B2.4.H	TCLAG.IP3.B1.1.V	TCLAG.IP3.B1.2.H	TCLAG.IP3.B1.3.H	TCLAG.IP3.B1.4.H
TCLAG.IP3.B2.1.V	TCLAG.IP3.B2.2.H	TCLAG.IP3.B2.3.H	TCLAG.IP3.B2.4.H	TCT.IP5.B1.1.H	TCT.IP5.B1.2.V	TCT.IP5.B2.1.H
TCT.IP5.B2.2.V	TCLIP5.B1.1.H	TCLIP5.B1.2.H	TCLIP5.B1.3.H	<b>TCLIP5.B1.4.H</b>	TCLIP5.B1.5.H	<b>TCDQ.IP6.B2.1.H</b>
<b>TCP.IP7.B1.1.V</b>	TCP.IP7.B1.2.H	TCP.IP7.B1.3.H	TCP.IP7.B1.4.H	<b>TCP.IP7.B1.5.H</b>	TCP.IP7.B1.6.H	TCSG.IP7.B1.10.S
TCSG.IP7.B1.11.H	<b>TCSG.IP7.B1.1.S</b>	TCSG.IP7.B1.2.S	TCSG.IP7.B1.3.S	TCSG.IP7.B1.4.V	TCSG.IP7.B1.5.H	TCSG.IP7.B1.6.S
TCSG.IP7.B1.7.S	TCSG.IP7.B1.8.S	TCSG.IP7.B1.9.S	TCSG.IP7.B2.10.S	TCSG.IP7.B2.11.H	TCSG.IP7.B2.1.S	TCSG.IP7.B2.2.S
TCSG.IP7.B2.3.S	TCSG.IP7.B2.4.V	TCSG.IP7.B2.5.H	TCSG.IP7.B2.6.S	TCSG.IP7.B2.7.S	TCSG.IP7.B2.8.S	TCSG.IP7.B2.9.S
TCLA.IP7.B1.1.V	TCLA.IP7.B1.2.H	<b>TCLA.IP7.B1.3.V</b>	TCLA.IP7.B1.4.H	TCLA.IP7.B1.5.H	TCLA.IP7.B2.1.V	TCLA.IP7.B2.2.H
TCLA.IP7.B2.3.V	TCLA.IP7.B2.4.H	TCLA.IP7.B2.5.H	TCT.IP8.B1.1.H	TCT.IP8.B1.2.V	TCT.IP8.B2.1.H	TCT.IP8.B2.2.V
<b>TCLI.IP8.B2.1.H</b>	TCLI.IP8.B2.2.H	<b>TDI.IP8.B2.1.H</b>	TCDI.TI2.B1.1.H	TCDI.TI2.B1.2.V	TCDI.TI2.B1.3.H	TCDI.TI2.B1.4.H
TCDI.TI2.B1.5.V	TCDI.TI2.B1.6.H	TCDI.TI2.B1.7.V	TCDI.TI8.B2.1.H	TCDI.TI8.B2.2.V	TCDI.TI8.B2.3.V	TCDI.TI8.B2.4.H
TCDI.TI8.B2.5.H	TCDI.TI8.B2.6.V	OK				

# Main Panel

Limit Status

TCT.IP1.B1.1.H	TCT.IP1.B1.2.V	TCT.IP1.B2.1.H	TCT.IP1.B2.2.V	TCLP.IP1.B1.1.H	TCL.IP1.B2.1.H	TCT.IP2.B1.1.H							
TCT.IP2.B1.2.V	TCT.IP2.B2.1.H	TCT.IP2.B2.2.V	TCDD.IP2.B1.1.H	<b>TDI.IP2.B1.1.H</b>	TCLI.IP2.B1.1.H	TCLI.IP2.B1.2.H							
TCP.IP3.B1.1.H	TCP.IP3.B2.1.H	TCSG.IP3.B1.1.H	TCSG.IP3.B1.2.H	TCSG.IP3.B1.3.H	TCSG.IP3.B1.4.H	TCSG.IP3.B2.1.H							
<b>TCSG.IP3.B2.2.H</b>	TCSG.IP3.B2.3.H	TCSG.IP3.B2.4.H	TCLAG.IP3.B1.1.V	TCLAG.IP3.B1.2.H	TCLAG.IP3.B1.3.H	TCLAG.IP3.B1.4.H							
TCLAG.IP3.B2.1.V	TCLAG.IP3.B2.2.H	TCT.IP5.B1.2.V	TCT.IP5.B2.1.H	TCT.IP5.B1.2.V	TCT.IP5.B2.1.H	TCDQ.IP6.B1.1.H	<b>TCDQ.IP6.B2.1.H</b>						
TCT.IP5.B2.2.V	TCLIP5.B1.1.H	TCP.IP7.B1.1.V	TCP.IP7.B1.2.H	TCP.IP7.B2.3.S	TCSG.IP7.B1.10.S	TCSG.IP7.B1.5.H	TCSG.IP7.B1.6.S						
<b>TCP.IP7.B1.1.V</b>	TCSG.IP7.B1.1.S	TCSG.IP7.B1.7.S	TCSG.IP7.B1.8.S	TCSG.IP7.B1.9.S	TCSG.IP7.B2.10.S	TCSG.IP7.B2.11.H	TCSG.IP7.B2.1.S	TCSG.IP7.B2.2.S					
TCSG.IP7.B2.3.S	TCSG.IP7.B2.4.V	TCSG.IP7.B2.5.H	TCSG.IP7.B2.6.S	TCSG.IP7.B2.7.S	TCSG.IP7.B2.8.S	TCSG.IP7.B2.9.S	TCLA.IP7.B1.1.V	TCLA.IP7.B1.2.H	<b>TCLA.IP7.B1.3.V</b>	TCLA.IP7.B1.4.H	TCLA.IP7.B1.5.H	TCLA.IP7.B2.1.V	TCLA.IP7.B2.2.H
TCLA.IP7.B2.3.V	TCLA.IP7.B2.4.H	TCLA.IP7.B2.5.H	TCT.IP8.B1.1.H	TCT.IP8.B1.2.V	TCT.IP8.B2.1.H	TCT.IP8.B2.2.V	<b>TCLI.IP8.B2.1.H</b>	TCLI.IP8.B2.2.H	<b>TDI.IP8.B2.1.H</b>	TCDI.TI2.B1.1.H	TCDI.TI2.B1.2.V	TCDI.TI2.B1.3.H	TCDI.TI2.B1.4.H
TCDI.TI2.B1.5.V	TCDI.TI2.B1.6.H	TCDI.TI2.B1.7.V	TCDI.TI8.B2.1.H	TCDI.TI8.B2.2.V	TCDI.TI8.B2.3.V	TCDI.TI8.B2.4.H	TCDI.TI8.B2.5.H	TCDI.TI8.B2.6.V					

Input

? Difference between settings and positions  
Minimum [mm]

0.1

OK Cancel

OK

# Main Panel

Limit Status

TCT.IP1.B1.1.H	TCT.IP1.B1.2.V	TCT.IP1.B2.1.H	TCT.IP1.B2.2.V	TCLP.IP1.B1.1.H	TCL.IP1.B2.1.H	TCT.IP2.B1.1.H
TCT.IP2.B1.2.V	TCT.IP2.B2.1.H	TCT.IP2.B2.2.V	TCDD.IP2.B1.1.H	<b>TDI.IP2.B1.1.H</b>	TCLI.IP2.B1.1.H	TCLI.IP2.B1.2.H
TCP.IP3.B1.1.H	TCP.IP3.B2.1.H	TCSG.IP3.B1.1.H	TCSG.IP3.B1.2.H	TCSG.IP3.B1.3.H	TCSG.IP3.B1.4.H	TCSG.IP3.B2.1.H
<b>TCSG.IP3.B2.2.H</b>	TCSG.IP3.B2.3.H	TCSG.IP3.B2.4.H	TCLAG.IP3.B1.1.V	TCLAG.IP3.B1.2.H	TCLAG.IP3.B1.3.H	TCLAG.IP3.B1.4.H
TCLAG.IP3.B2.1.V	TCLAG.IP3.B2.2.H	TCT.IP5.B1.2.V	TCT.IP5.B2.1.H			
TCT.IP5.B2.2.V	TCLIP5.B1.1.H	<b>TCDQ.IP6.B1.1.H</b>	<b>TCDQ.IP6.B2.1.H</b>			
<b>TCP.IP7.B1.1.V</b>	TCP.IP7.B1.2.H	<b>TCP.IP7.B2.3.S</b>	TCSG.IP7.B1.10.S			
TCSG.IP7.B1.11.H	<b>TCSG.IP7.B1.1.S</b>	TCSG.IP7.B1.5.H	TCSG.IP7.B1.6.S			
TCSG.IP7.B1.7.S	TCSG.IP7.B1.8.S	TCSG.IP7.B1.9.S	TCSG.IP7.B2.10.S	TCSG.IP7.B2.11.H	TCSG.IP7.B2.1.S	TCSG.IP7.B2.2.S
TCSG.IP7.B2.3.S	TCSG.IP7.B2.4.V	TCSG.IP7.B2.5.H	TCSG.IP7.B2.6.S	TCSG.IP7.B2.7.S	TCSG.IP7.B2.8.S	TCSG.IP7.B2.9.S
TCLA.IP7.B1.1.V	TCLA.IP7.B1.2.H	<b>TCLA.IP7.B1.3.V</b>	TCLA.IP7.B1.4.H	TCLA.IP7.B1.5.H	TCLA.IP7.B2.1.V	TCLA.IP7.B2.2.H
TCLA.IP7.B2.3.V	TCLA.IP7.B2.4.H	TCLA.IP7.B2.5.H	TCT.IP8.B1.1.H	TCT.IP8.B1.2.V	TCT.IP8.B2.1.H	TCT.IP8.B2.2.V
<b>TCLI.IP8.B2.1.H</b>	TCLI.IP8.B2.2.H	<b>TDI.IP8.B2.1.H</b>	TCDI.TI2.B1.1.H	TCDI.TI2.B1.2.V	TCDI.TI2.B1.3.H	TCDI.TI2.B1.4.H
TCDI.TI2.B1.5.V	TCDI.TI2.B1.6.H	TCDI.TI2.B1.7.V	TCDI.TI8.B2.1.H	TCDI.TI8.B2.2.V	TCDI.TI8.B2.3.V	TCDI.TI8.B2.4.H
TCDI.TI8.B2.5.H	TCDI.TI8.B2.6.V	OK				

Input

? Difference between settings and positions  
Maximum [mm]  
0.2

OK Cancel



# Main Panel

The screenshot shows a window titled "Limit Status" containing a grid of buttons representing different collimators. The buttons are color-coded: green for status within limits, red for status outside limits, and yellow for status in a warning zone. A callout box points to a specific list of collimators within the defined limits. A dialog box titled "Chose a collimator" is open, displaying a scrollable list of these collimators.

**List of collimators inside the defined limits:**

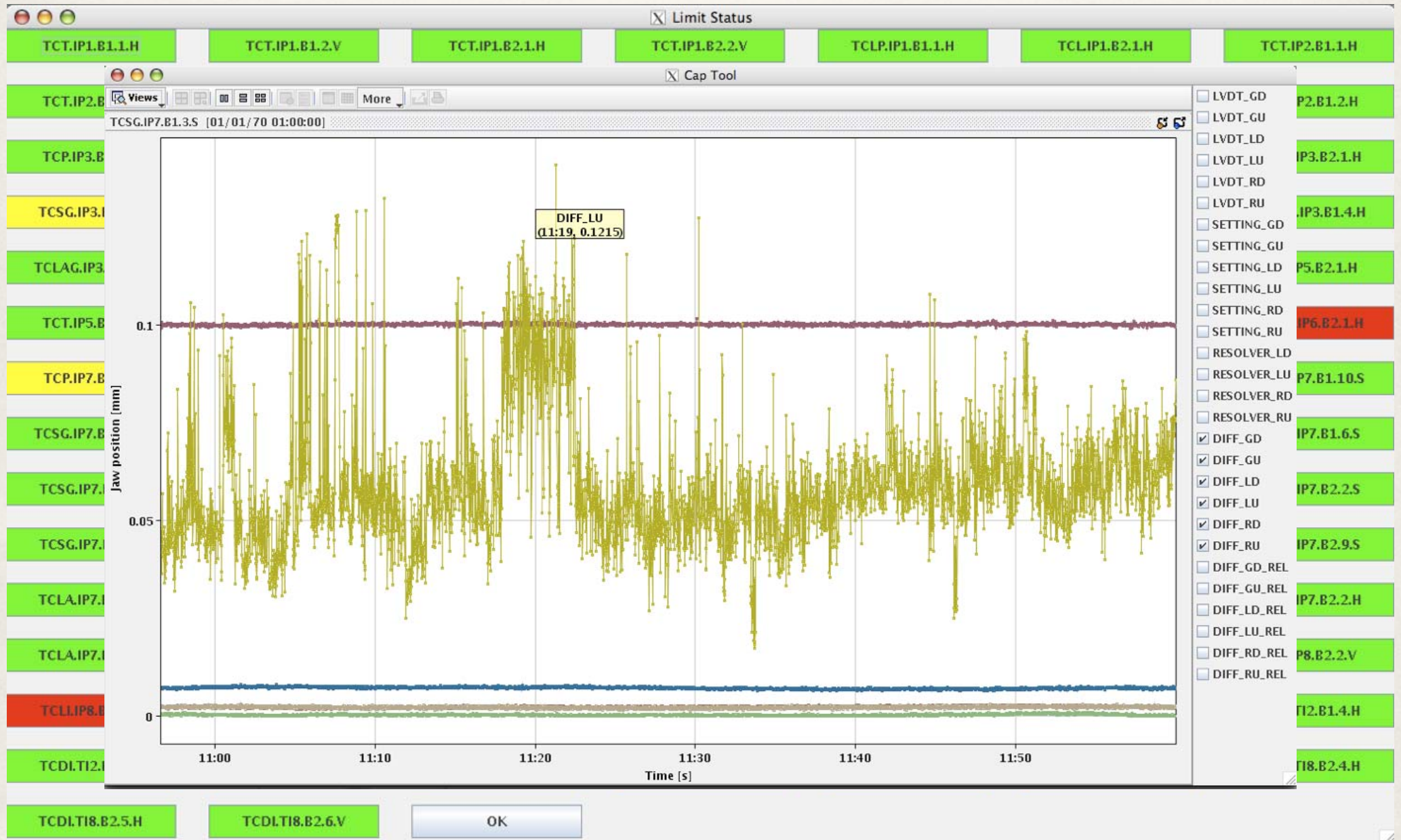
- TCT.IP1.B1.1.H
- TCT.IP1.B1.2.V
- TCT.IP1.B2.1.H
- TCT.IP1.B2.2.V
- TCLP.IP1.B1.1.H
- TCLP.IP1.B2.1.H
- TCT.IP2.B1.1.H
- TCT.IP2.B1.2.V
- TCT.IP2.B2.1.H
- TCT.IP2.B2.2.V
- TCDD.IP2.B1.1.H
- TCLI.IP2.B1.1.H
- TCLI.IP2.B1.2.H
- TCP.IP3.B1.1.H
- TCSG.IP3.B1.3.H
- TCSG.IP3.B1.4.H
- TCSG.IP3.B2.1.H
- TCSG.IP3.B2.2.H
- TCSG.IP3.B2.3.H
- TCSG.IP3.B2.4.H
- TCLAG.IP3.B1.3.H
- TCLAG.IP3.B1.4.H
- TCLAG.IP3.B2.1.V
- TCLAG.IP3.B2.2.H
- TCLAG.IP3.B2.3.H
- TCLAG.IP3.B2.4.H
- TCT.IP5.B1.1.H
- TCT.IP5.B1.2.V
- TCT.IP5.B2.1.H
- TCT.IP5.B2.2.V
- TCLIP5.B1.1.H
- TCLIP5.B2.1.H
- TCDQ.IP6.B1.1.H
- TCDQ.IP6.B2.1.H
- TCP.IP7.B1.1.V
- TCP.IP7.B1.2.H
- TCP.IP7.B1.3.H
- TCP.IP7.B1.4.H
- TCP.IP7.B2.3.S
- TCSG.IP7.B1.10.S
- TCSG.IP7.B1.11.H
- TCSG.IP7.B1.1.S
- TCSG.IP7.B1.2.S
- TCSG.IP7.B1.3.S
- TCSG.IP7.B1.4.V
- TCSG.IP7.B1.5.H
- TCSG.IP7.B1.6.S
- TCSG.IP7.B1.7.S
- TCSG.IP7.B1.8.S
- TCSG.IP7.B1.9.S
- TCSG.IP7.B2.7.S
- TCSG.IP7.B2.1.S
- TCSG.IP7.B2.2.S
- TCSG.IP7.B2.3.S
- TCSG.IP7.B2.4.V
- TCSG.IP7.B2.5.H
- TCSG.IP7.B2.6.S
- TCSG.IP7.B2.7.S
- TCSG.IP7.B2.8.S
- TCSG.IP7.B2.9.S
- TCLA.IP7.B1.1.V
- TCLA.IP7.B1.2.H
- TCLA.IP7.B1.3.V
- TCLA.IP7.B1.4.H
- TCLA.IP7.B1.5.H
- TCLA.IP7.B2.1.V
- TCLA.IP7.B2.2.H
- TCLA.IP7.B2.3.V
- TCLA.IP7.B2.4.H
- TCLA.IP7.B2.5.H
- TCT.IP8.B1.1.H
- TCT.IP8.B1.2.V
- TCT.IP8.B2.1.H
- TCT.IP8.B2.2.V
- TCLI.IP8.B2.1.H
- TCLI.IP8.B2.2.H
- TDI.IP8.B2.1.H
- TCDI.TI2.B1.1.H
- TCDI.TI2.B1.2.V
- TCDI.TI2.B1.3.H
- TCDI.TI2.B1.4.H
- TCDI.TI2.B1.5.V
- TCDI.TI2.B1.6.H
- TCDI.TI2.B1.7.V
- TCDI.TI8.B2.1.H
- TCDI.TI8.B2.2.V
- TCDI.TI8.B2.3.V
- TCDI.TI8.B2.4.H
- TCDI.TI8.B2.5.H
- TCDI.TI8.B2.6.V

**Chose a collimator dialog:**

- TCSG.IP7.B1.3.S
- TCLI.IP2.B1.2.H
- TCT.IP5.B1.1.H
- TCLIP5.B2.1.H
- TCP.IP7.B1.1.V
- TCSG.IP7.B1.3.S
- TCSG.IP7.B2.7.S
- TCDI.TI2.B1.1.H
- TCDI.TI2.B1.5.V

OK

# Main Panel



# Future Developments

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- ❖ Just one initial panel for data selection + default values (current date and time)
- ❖ Separate analysis for Beam 1 and Beam 2 collimators
- ❖ Separate analysis for IRs.
- ❖ Interactive main panel (plot limits and position sensors)
- ❖ Implement an “update” button to load fresh data without needing to relaunch the program

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