



JAGIELLONIAN UNIVERSITY
IN KRAKOW



SOLARIS
NATIONAL SYNCHROTRON
RADIATION CENTRE

Beam threading GUI

Project coordinator:

Łukasz Żytński

Developer:

Wojciech Kitka



- ❖ Controlling beam's trajectory by correctors
 - ❖ Monitoring beam's trajectory by YAG screens and BPMs
-

- ❖ Gun
 - ❖ Linac
 - ❖ Transfer line
 - ❖ Status
 - ❖ Menu
-

- ❖ **Correctors subsection** allows user to control beam by setting current on magnets. Operator can also type values of angle and electromagnetic field – they are converted into current.
 - ❖ **YAG screens subsection** has an option to display and save image from the camera.
-

Beam Threading GUI

Gun | Linac | Transfer Line | Status

<input checked="" type="radio"/> I-500-COBX1 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input checked="" type="radio"/> I-500-COBX2 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input checked="" type="radio"/> I-500-COBX3 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input type="radio"/> I-500-COBX4 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]
<input checked="" type="radio"/> I-500-COBY1 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input checked="" type="radio"/> I-500-COBY2 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input checked="" type="radio"/> I-500-COBY3 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input type="radio"/> I-500-COBY4 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]
<input checked="" type="radio"/> I-500-COBX5 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input checked="" type="radio"/> I-500-COBX6 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input checked="" type="radio"/> I-500-COBX7 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	
<input checked="" type="radio"/> I-500-COBY5 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input checked="" type="radio"/> I-500-COBY6 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	<input checked="" type="radio"/> I-500-COBY7 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [GeV] <input type="radio"/> [T]	

Previous tab

Next tab

Import config file

Create config file

Import default config files

TANGO_HOST: 192.168.130.200:10000

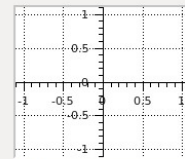
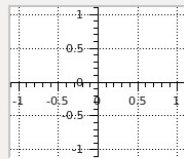
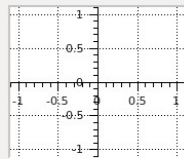
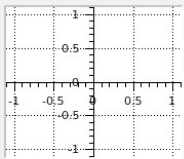


- ❖ **Correctors subsection** allows user to control beam by setting current on magnets. Operator can also type values of angle and electromagnetic field – they are converted into current.
 - ❖ **YAG screens subsection** has an option to display and save image from the camera.
 - ❖ **BPMs subsections** show beam trajectory on linac.
-

Beam Threading GUI

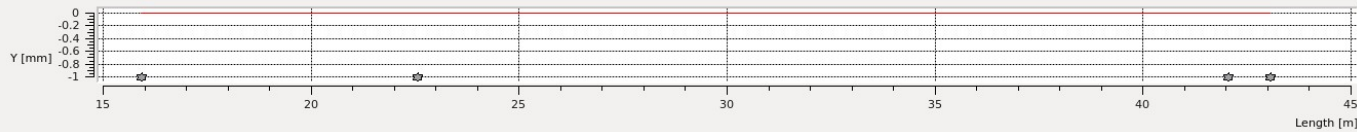
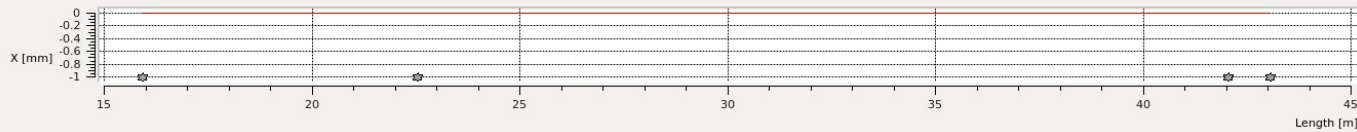
Gun Linac Transfer Line Status

<input checked="" type="radio"/> I-S01A-COEX <input type="radio"/> None <input type="radio"/> [mrad] <input type="text" value=""/> <input type="radio"/> [T] <input type="text" value=""/> [GeV]	<input checked="" type="radio"/> I-S01B-COEX <input type="radio"/> None <input type="radio"/> [mrad] <input type="text" value=""/> <input type="radio"/> [T] <input type="text" value=""/> [GeV]	<input type="radio"/> I-S03A-COEX <input type="radio"/> None <input type="radio"/> [mrad] <input type="text" value=""/> <input type="radio"/> [T] <input type="text" value=""/> [GeV]	<input type="radio"/> I-S03B-CODX1 <input type="radio"/> None <input type="radio"/> [mrad] <input type="text" value=""/> <input type="radio"/> [T] <input type="text" value=""/> [GeV]	<input type="radio"/> I-S03B-CODX2 <input type="radio"/> None <input type="radio"/> [mrad] <input type="text" value=""/> <input type="radio"/> [T] <input type="text" value=""/> [GeV]
<input checked="" type="radio"/> I-S01A-COEY <input type="radio"/> None <input type="radio"/> [mrad] <input type="text" value=""/> <input type="radio"/> [T] <input type="text" value=""/> [GeV]	<input checked="" type="radio"/> I-S01B-COEY <input type="radio"/> None <input type="radio"/> [mrad] <input type="text" value=""/> <input type="radio"/> [T] <input type="text" value=""/> [GeV]	<input type="radio"/> I-S03A-COEY <input type="radio"/> None <input type="radio"/> [mrad] <input type="text" value=""/> <input type="radio"/> [T] <input type="text" value=""/> [GeV]	<input type="radio"/> I-S03B-COEY <input type="radio"/> None <input type="radio"/> [mrad] <input type="text" value=""/> <input type="radio"/> [T] <input type="text" value=""/> [GeV]	



Load image:

Save image as:



Previous tab

Next tab

Import config file

Create config file

Import default config files

TANGO_HOST: 192.168.130.200:10000



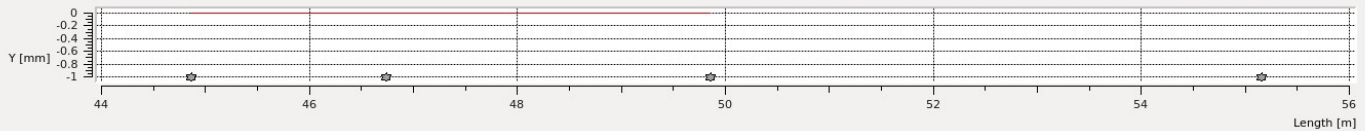
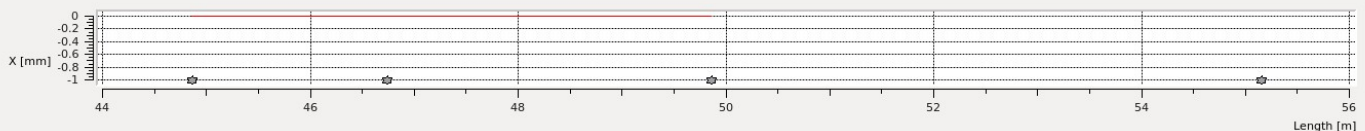
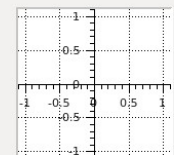
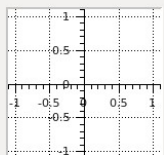
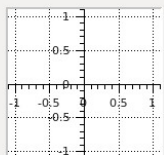
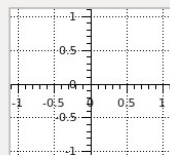
- ❖ **Correctors subsection** allows user to control beam by setting current on magnets. Operator can also type values of angle and electromagnetic field – they are converted into current.
 - ❖ **YAG screens subsection** has an option to display and save image from the camera.
 - ❖ **BPMs subsections** show beam trajectory on transfer line.
-



Beam Threading GUI

Gun Linac **Transfer Line** Status

<input checked="" type="radio"/> I-TR1-COEX <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [T] <input type="radio"/> [GeV]	<input checked="" type="radio"/> I-TR1-CODX1 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [T] <input type="radio"/> [GeV]	<input checked="" type="radio"/> I-TR1-CODX2 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [T] <input type="radio"/> [GeV]	<input checked="" type="radio"/> I-TR1-CODX3 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [T] <input type="radio"/> [GeV]
<input checked="" type="radio"/> I-TR1-COEY <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [T] <input type="radio"/> [GeV]	<input checked="" type="radio"/> I-TR1-CODY1 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [T] <input type="radio"/> [GeV]	<input checked="" type="radio"/> I-TR1-CODY2 <input type="radio"/> None <input type="radio"/> [mrad] <input type="radio"/> [T] <input type="radio"/> [GeV]	













































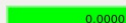



















TANGO_HOST: 192.168.130.200:10000

Status section displays:

- ❖ Correctors' names
 - ❖ Correctors' states
 - ❖ Correctors' statuses
 - ❖ Correctors' temporary currents
-

Beam Threading GUI

Gun Linac Transfer Line **Status**

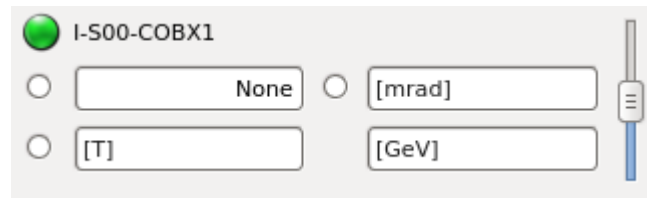
I-500-COBX1	 Power supply is ON I [A]:	 -0.7000	I-S01A-COEX	 All reconnection attempts failed. Check cables and device. I [A]:		I-TR1-COEX	 Power Supply is OFF I [A]:	 0.0000
I-500-COBY1	 Power supply is ON I [A]:	 -0.9000	I-S01A-COEY	 All reconnection attempts failed. Check cables and device. I [A]:		I-TR1-COEY	 Power Supply is OFF I [A]:	 -0.0000
I-500-COBX2	 Power supply is ON I [A]:	 1.2000	I-S01B-COEX	 All reconnection attempts failed. Check cables and device. I [A]:		I-TR1-CODX1	 Power Supply is OFF I [A]:	 0.0000
I-500-COBY2	 Power supply is ON I [A]:	 0.9000	I-S01B-COEY	 All reconnection attempts failed. Check cables and device. I [A]:		I-TR1-CODY1	 Power Supply is OFF I [A]:	 -0.0000
I-500-COBX3	 Power supply is ON I [A]:	 1.2000	I-S03A-COEX	 Power Supply is OFF I [A]:		I-TR1-CODX2	 Power Supply is OFF I [A]:	 -0.0000
I-500-COBY3	 Power supply is ON I [A]:	 0.7000	I-S03A-COEY	 Power Supply is OFF I [A]:		I-TR1-CODY2	 Power Supply is OFF I [A]:	 0.0000
I-500-COBX4	  I [A]:		I-S03B-CODX1	 Power Supply is OFF I [A]:		I-TR1-CODX3	 Power Supply is OFF I [A]:	 0.0000
I-500-COBY4	  I [A]:		I-S03B-COEY	 Power Supply is OFF I [A]:				
I-500-COBX5	 Power supply is ON I [A]:	 1.5000	I-S03B-CODX2	 Power Supply is OFF I [A]:				
I-500-COBY5	 Power supply is ON I [A]:	 0.5000						
I-500-COBX6	 Power supply is ON I [A]:	 0.0000						
I-500-COBY6	 Power supply is ON I [A]:	 0.0000						
I-500-COBX7	 Power supply is ON I [A]:	 -0.0000						
I-500-COBY7	 Power supply is ON I [A]:	 -0.0000						



Previous tab Next tab

TANGO_HOST: 192.168.130.200:10000

❖ Corrector widgets are the place where values are setted

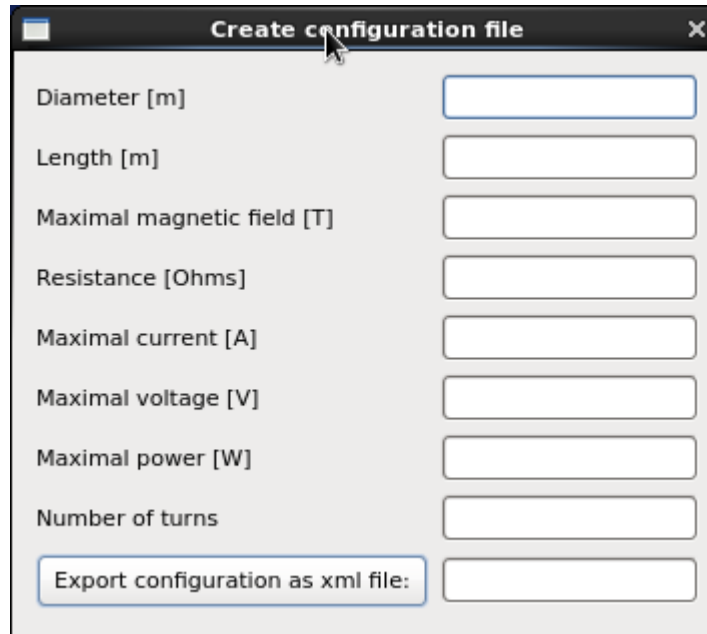


❖ BPM widgets

❖ YAG screens widget

- ❖ Loading configuration file
 - ❖ Creating configuration file
 - ❖ Changing tabs
 - ❖ Checking tango host
-

Creates configuration files in .xml format used in corrector widgets to convert values.



The screenshot shows a dialog box titled "Create configuration file" with a close button (X) in the top right corner. The dialog contains several input fields for configuration parameters:

Diameter [m]	<input type="text"/>
Length [m]	<input type="text"/>
Maximal magnetic field [T]	<input type="text"/>
Resistance [Ohms]	<input type="text"/>
Maximal current [A]	<input type="text"/>
Maximal voltage [V]	<input type="text"/>
Maximal power [W]	<input type="text"/>
Number of turns	<input type="text"/>
Export configuration as xml file:	<input type="text"/>

References:
www.synchrotron.pl
www.tango-controls.org



Thank you for attention!