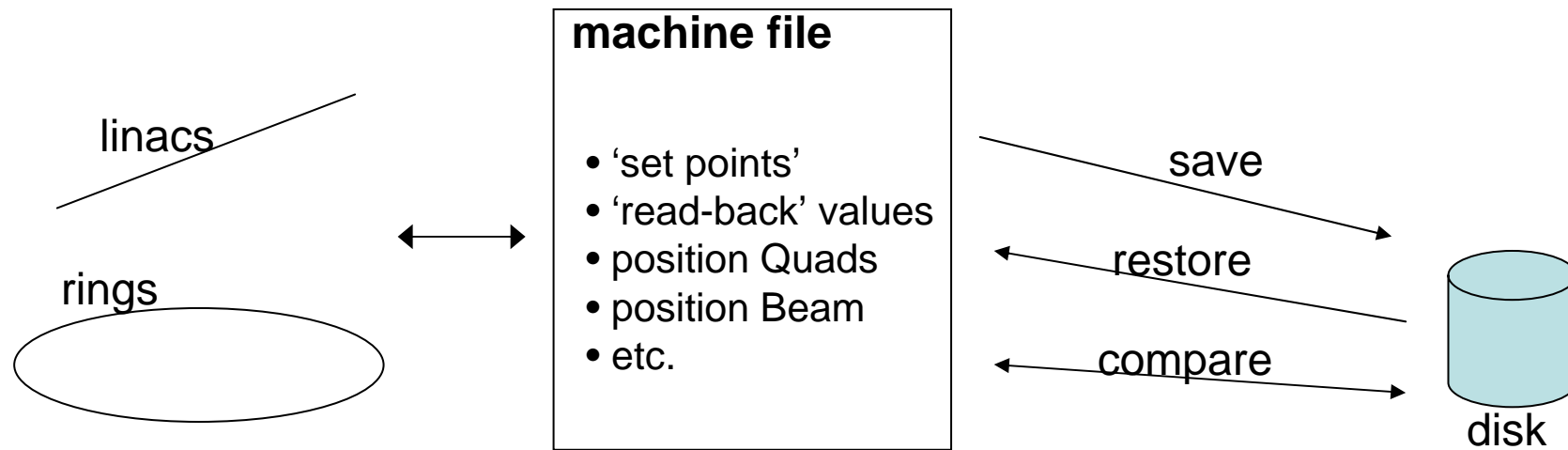


A more reproducible FLASH operation with the new machine file system

Jürgen Maass (MCS) and Pedro Castro (MPY)

Definition: "Machine file system"



There is an existing solution to read and save parameters: Save & Restore program

Save & Restore Version 1.5

File Show file Save Act. as Ref. Read Only (##) Update [sec]: 30

Last update: Sat Feb 10 21:54:12 2007

Comment: 12 bunches, 28 uJ @ GMD-B (5 mm ap.)

Printer: ttflog

Name	Actual	Reference
== TTF2.MAGNETS/SOL/1CATH/PS	22.5373	22.5373
!= TTF2.MAGNETS/SOL/1GUN/PS	281.9	282.1
!= TTF2.MAGNETS/STEERER/H1GUN/PS	-0.202686	-0.20757
!= TTF2.MAGNETS/STEERER/V2GUN/PS	-1.03541	-1.07937
!= TTF2.MAGNETS/STEERER/H3GUN/PS	0.205128	0.210012
!= TTF2.MAGNETS/STEERER/V3GUN/PS	-0.319902	-0.30525
== TTF2.MAGNETS/DIPOLE/D1IDUMP/PS	0	0
== TTF2.MAGNETS/QUAD/Q9ACC1/PS	3.74279	3.74279
== TTF2.MAGNETS/QUAD/Q10ACC1/PS	-4.15296	-4.15296
== TTF2.MAGNETS/STEERER/H10ACC1/PS	-0.227058	-0.227058
== TTF2.MAGNETS/STEERER/V10ACC1/PS	-1.05106	-1.05106
== TTF2.MAGNETS/STEERER/V1UBC2/PS	0.0119658	0.0119658
== TTF2.MAGNETS/STEERER/H1UBC2/PS	0.0259829	0.0259829
== TTF2.MAGNETS/QUAD/Q1UBC2/PS	-38.8153	-38.8153
== TTF2.MAGNETS/QUAD/Q2UBC2/PS	5.28267	5.28267
== TTF2.MAGNETS/QUAD/Q3UBC2/PS	34.5562	34.5562
== TTF2.MAGNETS/DIPOLE/D1BC2/PS	61.5994	61.5994
== TTF2.MAGNETS/STEERER/H1BC2/PS	0	0

Selected items 0 Different Items: 52 Error #: 0

Selected set to: Restore all INT Format dec Edit...

Selected delete Selected Save: Actual -> Ref. Selected Restore: Actual <- Ref. Clear list Show array

Copy to devices with merge address: /// Selected Ref->Dev All Ref->Dev Save to file Help

Comparison accuracy (float only): 4 Scaling factor: 1.0 Selected Rescale: Act. Selected Rescale: Ref.

Index:

- overview of the project
- four cases where the new file system can help you
- other features
- summary and outlook

Scope of this presentation:

- present the advantages of the new system
- present some new concepts
- open a long-term forum for discussion, exchange of ideas between users (operators), coordinators and programmers

out of scope:

- how to get a reproducible machine
- to demonstrate that the machine is more reproducible with this program
- which programming language, which file format, which server, etc

OVERVIEW OF THE PROJECT "FILE SYSTEM"

Goal: PETRA III

http://adweb.desy.de/mst/PETRA_III_Kontrollsystem/Projektplanung/Wbs/Betriebsautomatisierung.htm

Betriebsautomatisierung (Zustände, Abläufe, Freigaben)

Stand: 06.06.2007

Autor: R. Bacher

♦ Verantwortliche Person: J. Maass

Goal extension: also for FLASH

Collaboration:

MCS 1 : J. Maass, S. Herb

+

MCS 4 : K. Rehlich, R. Kammering, O. Hensler, E. Sombrowski, F. Teger

+

MPY : P. Castro

Goal extension: also for FLASH

Test alpha- or beta-versions in FLASH:

- early feedback from operators → easier to re-program
- FLASH operation can profit now

But:

- programs are not finished (only 10% done)
- programs have not all features
- programs can be full of bugs (please, report them to us)

Advantages of a common software for all machines:

- extensive tests by FLASH → less bugs for PETRA III
- operators needs to learn how to use ONE program
- only ONE program to maintain

But:

- control systems are different
- machines are really different (have different requirements)

- ◊ ~~*Transportwegoptimierung und Injektion:*~~
 - kritisch ist die vertikale Ebene
- ◊ *Rampen:*
 - ~~keine große Rampzyklen mit Strahl mehr,~~
 - Zyklen in Gruppen oder alle Magnete zusammen, ~~gegenseitige Beeinflussung beachten~~
- ◊ *Beulen:*
 - aller Art,
 - zur Feinabstimmung mit Strahl
- ◊ ~~*Korrektur der Orbitstörungen beim Undulator Fahren:*~~
 - möglicherweise über statische Tabellen die im Undulator integrierten Korrekturspulen nachfahren (Feedforward),
 - ~~Tune nachziehen,~~
 - Zusammenhang Beschleuniger (Orbit) und Beamlines (Photonenstrahlage) beachten
- ◊ *langsameres Orbitfeedback:*
 - ~~< 0.1 Hz,~~
 - möglicherweise müssen die Korrektortabellen vom Kontrollsystem dynamisch angepasst werden
- ◊ ~~*Füllmuster:*~~
 - verschiedene Muster,
 - Bunchzahl variiert zwischen 40 / 960 auf Wochen- bzw. Monatsbasis,
 - möglicherweise auch andere Füllmuster gewünscht ("Hybridmodus")
- ◊ ~~*Top-Up Betrieb:*~~
 - Schnittstelle und Regelloop zu /mit MSK
- ◊ *Übergeordnete Funktionen des Autopilots:*
 - routinemäßiger Strahlbetrieb,
 - Optimierung nach Wartungstagen und/oder Kurzreparaturen,
 - Aufsetzen des Beschleunigers und Einbinden von Matlab Prozeduren (z.B. Messung der Chromatizität) → MPY
- ◊ *Optik:*
 - Optik → Maschine (Stromliste),
 - Maschine (Stromliste) → Optik
- ◊ *Referenzorbits:*
 - ◊ ~~in Abhängigkeit vom Füllmuster~~
- ◊ *Alarme:*
 - umfangreiches und konsistentes Alarmsystem,
 - ? ■ Erzeugung von Voralarme, damit rechtzeitig reagiert werden kann,
 - Fehler bei den Vorbeschleunigern müssen innerhalb weniger Minuten behoben sein,
 - Operatorerfahrungen mit Alarmsystemen bei HERA, PETRA, DORIS und den Vorbeschleunigern dokumentieren und einfließen lassen
- ◊ *Freigaben:*
 - ? ? ■ Permit System

Four cases where the new file system can help you

Case 1) which file should I use?

1) list of files:

```
...
all_magnets_20070312_4.sr
all_magnets_20070313_1.sr
all_magnets_20070314_1.sr
all_magnets_20070314_2.sr
all_magnets_20070314_3.sr
all_magnets_20070314_5.sr
all_magnets_20070315_1.sr
all_magnets_20070315_2.sr
all_magnets_20070315_3.sr
all_magnets_20070315_4.sr
all_magnets_20070315_5.sr
all_magnets_20070315_6.sr
all_magnets_20070315_7.sr
all_magnets_20070315_8.sr
all_magnets_20070326.sr
```

which one is good?

for bypass or for SASE?

which wavelength? how much SASE?

taken with beam?

total: 4000 + 1500 files saved in FLASH

/home/ttflinac/save_restore/Magnets/

Cycling/

```
References/ --> magnets_*_reference.sr ( 6 files)
autosaved/ -----> all_Magnets_2007* (507 files)
  2006/ -----> all_Magnets_2006* (860 files)
  old_data/ -----> saved_2006* (254 files)
machine-setup/ -----> setup_* (2004) ( 10 files)
old/ --> "040505_100MeV_Transm2End.sr" ( 7 files)
run01-04/ -----> all_magnets_04* ( 35 files)
  -----> inj_magnets_04* ( 35 files)
run02-04/ -----> all_magnets_2004* (210 files)
  -----> all_magnets_2002* ( 1 file)
  Injector/ ----> injector_magnets_* ( 13 files)
run01-05/ -----> all_magnets_2005* (640 files)
run02-05/ -----> all_magnets_2005* (175 files)
run03-05/ -----> all_magnets_2005* ( 57 files)
  --> magnets_*_reference.sr ( 6 files)
run01-06/ -----> all_magnets_2006* (327 files)
  -----> all_magnets_2005* ( 2 files)
run02-06/ -----> all_magnets_2006* (583 files)
  --> magnets_*_reference.sr ( 6 files)
run03-06/ -----> all_magnets_2006* (124 files)
run01-07/ -----> all_magnets_2007* (145 files)
```

/home/ttflinac/save_restore/Micromovers/

```
autosaved/ --> uMovers_2006* (863 files)
  --> uMovers_2007* (505 files)
run-Sep-2005-May-2006/ --> all_magnets_20051206_1.sr ( 1 file)
  --> all_uMOVERs_2005* ( 22 files)
  --> all_uMOVERs_2006* ( 80 files)
  Old_direction/ --> all_uMOVERs_2005* ( 25 files)
  old_files/ --> motor_mmpos_SP_2005* ( 7 files)
MultiKnob/
Optics/
Orbit/
RESCALINGTEST/ --> all_magnets_2006* ( 2 files)
References/
  reference_for_WL/ --> all_magnets_2006* ( 14 files)
  --> all_uMOVERs_2006* ( 13 files)
```

1) list of files: THE SOLUTION

File browser / Catalog viewer

Viewer of FLASH saved settings

File classification: all

Beamline: all

Search text (in comment):

Search text (in authors):

Timestamp

Age

Classification

Beamline

Comment

Authors

e- Energy

Wavelength

S&R filename

Link to e-log

Used count

4182 files in this catalog. 4182 files listed. PRINT this table

Timestamp	Age [d. ...]	Classification	Beamline	Comment	Authors	Energy [MeV]	λ [nm]	S&R filename	e-log link	Us...
2007-03-15T15:01:08+01	150.843	normal	undulator		Froehlich, Klos...	450.579	31.032		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T14:57:56+01	150.845	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T14:45:33+01	150.854	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T14:18:31+01	150.873	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T13:59:36+01	150.886	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T13:30:57+01	150.906	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T13:09:01+01	150.921	normal	undulator			450.579	31.032		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T11:48:51+01	150.977	normal	undulator			447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T07:06:48+01	151.173	normal	undulator		Petrosyan, Prat	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T06:36:03+01	151.194	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T04:34:34+01	151.278	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T04:14:14+01	151.292	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T01:42:42+01	151.398	normal	bypass	rescale from 27 nm, 1 bunch 40 uJ ...		401.445	0	/home/ttflina...		0
2007-03-15T00:28:08+01	151.449	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T00:08:19+01	151.463	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-14T23:04:54+01	151.507	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0

Selected file: RESTORE in FLASH

Case 2) I need SASE at 24.5 nm,
which file should I use?

2) you need SASE at (for example) 24.5 nm

phone the run-coordinator

ask E. Schneidmiller

look in ddd panel (B. Polzin)

or

search in e-logbook
(good luck!)

procedure_wavelength_change_ben

Wavelength change

under construction

SR Magnets 13.1 nm,	SR uMovers 13.1 nm
SR Magnets 13.7 nm, 680 MeV	SR uMovers 13.7 nm, 680 MeV
SR Magnets 15 nm, 650 MeV	SR uMovers 15 nm, 650 MeV
SR Magnets 17.2 nm, 610 MeV	SR uMovers 17.2 nm, 610 MeV
SR Magnets 19 nm, 605 MeV	SR uMovers 19 nm, 605 MeV
SR Magnets 21.2 nm, 550 MeV	SR uMovers 21.2 nm, 550 MeV
SR Magnets 25.2 nm, 500 MeV	
SR Magnets 27.6 nm, 478 MeV	SR uMovers 27.6 nm, 478 MeV
SR Magnets 29 nm, 465 MeV	SR uMovers 27.6 nm, 478 MeV
SR Magnets 32 nm, 445 MeV	SR uMovers 32 nm, 445 MeV
SR Magnets 35 nm, 428 MeV	SR uMovers 35 nm, 428 MeV
SR Magnets 38 nm, 407 MeV	SR uMovers 38 nm, 407 MeV
SR Magnets 40 nm, 397 MeV	SR uMovers 40 nm, 397 MeV

measured 28.6

SR Magnets 45 nm, 374 MeV

SR uMovers 45 nm, 374 MeV

den files glaube ich nicht .. beschreibung ist stark abweichend\

2) you need SASE at (for example) 24.5 nm: THE SOLUTION

Viewer of FLASH saved settings

File classification: all

Beamline: all

Search text (in comment):

Search text (in authors):

4182 files in this catalog. 4182 files listed. PRINT this table

Timestamp	Age [d...]	Classification	Beamline	Comment	Authors	Energy [MeV]	λ [nm]	S&R filename	e-log link	Us...
2007-03-15T15:01:08+01	150.843	normal	undulator		Froehlich, Klos...	450.579	31.032		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T14:57:56+01	150.845	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T14:45:33+01	150.854	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T14:18:31+01	150.873	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T13:59:36+01	150.886	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T13:30:57+01	150.906	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T13:09:01+01	150.921	normal	undulator			450.579	31.032		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T11:48:51+01	150.977	normal	undulator			447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T07:06:48+01	151.173	normal	undulator		Petrosyan, Prat	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T06:36:03+01	151.194	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T04:34:34+01	151.278	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T04:14:14+01	151.292	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-15T01:42:42+01	151.398	normal	bypass	rescale from 27 nm, 1 bunch 40 uJ ...		401.445	0	/home/ttflina...		0
2007-03-15T00:28:08+01	151.449	normal	undulator	rescale from 28 nm, 1 bunch 40 uJ ...		450.652	31.022	/home/ttflina...		0
2007-03-15T00:08:19+01	151.463	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0
2007-03-14T23:04:54+01	151.507	normal	undulator		Kocharyan, Milt...	447.219	31.5		http://ttfinfo.desy.de/TTFe...	0

Selected file: RESTORE in FLASH

+

select a wavelength (range) (to be implemented)

+

sort by SASE level or by date

Case 3) How close is the machine to the status described in a given logbook entry?

```

08.03.2007 22:51 tflinac Main linac parameters

Laser
Number of bunches ..... 15
Bunch frequency ..... 100 kHz
Macropulse rep'rate .... 5 Hz
Flashlamp current ..... 2
Flashlamp start time ... 2.16 ms
Attenuator SP ..... 5488
Iris diameter ..... 1.95 mm
Piezo Voltage ..... 4.944 V

Gun
Feedforward/Feedback ... on/on
Pfld SP ..... 3.25
Phase SP ..... -112.68 deg
Pfld (peak) ..... 3.509 MW
Prefl (peak) ..... 1.711 MW
Pfld (sample point 700) 3.6264 MW
Prefl (sample point 700) 0.053319 MW
Flat top ..... 200 us
Water temperature SP ... 60.31 deg C
Main solenoid ..... 294.6953 A
Bucking coil ..... 26.0018 A
Gun dipole ..... 0 A
Charge 3GUN(T1) ..... 0.91614 nC

ACC1
Feedforward/Feedback ... on/on
Pfld SP ..... 15.21
Phase SP ..... 176.9183
Pfld C1.ACC1 ..... 54.1813 kW
Pfld C5.ACC1 ..... 251.9692 kW
Flat top ..... 100 us
Beam loading comp. (BLC) off
BLC current/duration ... 0.8 mA/70 us
Dipole BC2 ..... 61.5994 A
Pyro 9DBC2 ..... -0.060908 V
Radiator 9DBC2 ..... open

ACC2/3
DSP trigger rate ..... 5 Hz
Feedforward/Feedback ... on/on
Pfld SP ..... 21.9
Phase SP ..... 88.7419
Pfld C5.ACC2 ..... 0.1567 kW
Pfld C1.ACC3 ..... 0.09197 kW
Flat top ..... 188 us
Beam loading comp. (BLC) off
BLC current/duration ... 0.8 mA/600 us
Dipole BC3 ..... 40.694 A
Pyro 14BC3 ..... -0.097174 V
Pyro 4DBC3 ..... -0.065883 V
Radiator 4DBC3 ..... open

ACC4/5
DSP trigger rate ..... 5 Hz
Feedforward/Feedback ... on/on
Pfld SP ..... 18.06
Phase SP ..... 178.7218

Collimator
Dipole D1ECOL ..... 122.4912 A
Energy dogleg ..... 691.8683 MeV

```


3) with a logbook entry, how to compare values?

```

08.03.2007 22:51 ttflinac Main linac parameters

Laser
Number of bunches ..... 15
Bunch frequency ..... 100 kHz
Macropulse rep'rate .... 5 Hz
Flashlamp current ..... 2
Flashlamp start time ... 2.16 ms
Attenuator SP ..... 5488
Iris diameter ..... 1.95 mm
Piezo Voltage ..... 4.944 V

Gun
Feedforward/Feedback ... on/on
Pfw'd SP ..... 3.25
Phase SP ..... -112.68 deg
Pfw'd (peak) ..... 3.509 MW
Prefl (peak) ..... 1.711 MW
Pfw'd (sample point 700) 3.6264 MW
Prefl (sample point 700) 0.053319 MW
Flat top ..... 200 us
Water temperature SP ... 60.31 deg C
Main solenoid ..... 294.6953 A
Bucking coil ..... 26.0018 A
Gun dipole ..... 0 A
Charge 3GUN(T1) ..... 0.91614 nC

ACC1
Feedforward/Feedback ... on/on
Pfw'd SP ..... 15.21
Phase SP ..... 176.9183
Pfw'd C1.ACC1 ..... 54.1813 kW
Pfw'd C5.ACC1 ..... 251.9692 kW
Flat top ..... 100 us
Beam loading comp. (BLC) off
BLC current/duration ... 0.8 mA/70 us
Dipole BC2 ..... 61.5994 A
Pyro 9DBC2 ..... -0.060908 V
Radiator 9DBC2 ..... open

ACC2/3
DSP trigger rate ..... 5 Hz
Feedforward/Feedback ... on/on
Pfw'd SP ..... 21.9
Phase SP ..... 88.7419
Pfw'd C5.ACC2 ..... 0.1567 kW
Pfw'd C1.ACC3 ..... 0.09197 kW
Flat top ..... 188 us
Beam loading comp. (BLC) off
BLC current/duration ... 0.8 mA/600 us
Dipole BC3 ..... 40.694 A
Pyro 14BC3 ..... -0.097174 V
Pyro 4DBC3 ..... -0.065883 V
Radiator 4DBC3 ..... open

ACC4/5
DSP trigger rate ..... 5 Hz
Feedforward/Feedback ... on/on
Pfw'd SP ..... 18.06
Phase SP ..... 178.7218
Pfw'd C1.ACC4 ..... 0.05278 kW
Pfw'd C2.ACC5 ..... 0.000939 kW
Flat top ..... 185 us
Beam loading comp. (BLC) off
BLC current/duration ... 0.8 mA/660 us

Collimator
Dipole D1EC0L ..... 122.4912 A
Energy dogleg ..... 691.8683 MeV

Dump
Dipole D1DUMP ..... 133.5912 A
Dipole D6DUMP ..... 147.0176 A
Radiation level (wall) . 163 counts/ms

Bypass
Dipole D1BYP ..... 0 A
Energy bypass ..... 2.6006 MeV

Feedbacks
Charge feedback ..... off
Charge feedback SP ..... 0.2 nC
PTD feedback ..... on

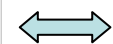
Magnets saved to:
/home/ttflinac/save_restore/Magnets/autosaved/all_Magnets_20070308T225118.sr
uMovers saved to:
/home/ttflinac/save_restore/Micromovers/autosaved/uMovers_20070308T225122.sr
Orbit reference saved in
/home/ttflinac/bin/matlab/orbit_stability/2007-03-08T225123-orbit-stability

```

open magnet currents (with SR)
open magnet positions (with SR)
open ref. orbit (with orbit display)

and

compare 'visually' with ddd panels



laser_control_simple: TTF2.UTIL/LASER.CONTROL/GUN/ Karsten & Max

Injector Laser Control

bunches: $\Delta\Delta\Delta$ + 0 \square long (no limit)
short (max. 30)
single (max. 2)

energy (att): $\Delta\Delta\Delta\Delta\Delta\Delta$ + 13908 \square -0.00 nC Toroid

frequency (kHz): 1000 500 250 200 100 50 40

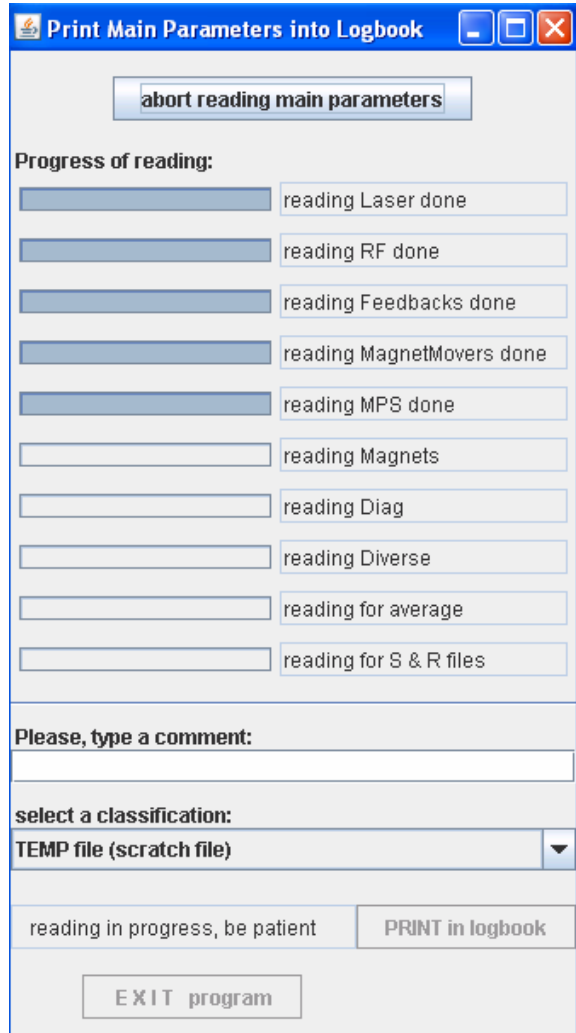
unblock laser Expert Beamline Help

SASE Tuning Parameters

	RF Settings			
	GUN	ACC1	ACC2/3	ACC4/5/6
Gradient	$\Delta\Delta\Delta\Delta\Delta\Delta$ + 0.00 \square	$\Delta\Delta\Delta\Delta\Delta$ + 0.00 \square	$\Delta\Delta\Delta\Delta\Delta$ + 0.00 \square	$\Delta\Delta\Delta\Delta\Delta$ + 0.00 \square
old	0.000	0.00	0.00	0.00
Readback	0.00	0.1	4.0	ill. service
Phase	$\Delta\Delta\Delta\Delta\Delta\Delta$ + 69.00 \square	$\Delta\Delta\Delta\Delta\Delta\Delta$ + 60.00 \square	$\Delta\Delta\Delta\Delta\Delta\Delta$ + 80.37 \square	$\Delta\Delta\Delta\Delta\Delta\Delta$ - 130.00 \square
old	69.00	60.00	80.37	-130.00
Readback	130.7	9.9	122.6	ill. service

3) with a logbook entry, SOLUTION to compare values

the new program to print into logbook:



saves all parameters into file
and prints

```
Feedbacks
Charge feedback ..... off
Charge feedback SP ..... 0.2 nC
PT0 feedback ..... on

Magnets saved to:
/home/ttflinac/save_restore/Magnets/autosaved/all_Magnets_20070308T225118.sr
uMovers saved to:
/home/ttflinac/save_restore/Micromovers/autosaved/uMovers_20070308T225122.sr
Orbit reference saved in
/home/ttflinac/bin/matlab/orbit_stability/2007-03-08T225123-orbit-stability
```

[open file](#)

button to start program
to view and compare values (to be implemented)

3) with a logbook entry, SOLUTION to compare values

the new program to compare values (not yet available)

- compare file values and present values

(in a similar way as SR:)

Name	Actual	Reference
== TTF2.MAGNETS/SOL/1CATH/PS	22.5373	22.5373
!= TTF2.MAGNETS/SOL/1GUN/PS	281.9	282.1
!= TTF2.MAGNETS/STEERER/H1GUN/PS	-0.202686	-0.20757
!= TTF2.MAGNETS/STEERER/V2GUN/PS	-1.03541	-1.07937
!= TTF2.MAGNETS/STEERER/H2GUN/PS	0.205120	0.210012

new features:

- compare values between two files
- compare values with 'individual tolerances'

example: steerer V6DBC2: 1 bit = 0.1 mA

dipole D6DUMP: 1 bit = 6.4 mA

- sort parameters by device, property, z position, diff., etc.

Case 4) how to restore magnet currents?

4) restore magnet currents

Manual procedure (example for FEL beamline):

- 1) stop beam and dark current
- 2) switch on D1IDUMP, D1BYP, D14SEED
- 3) set D1BYP to 60 A
- 4) restore currents (except D1BYP)
- 5) cycle magnets (except D1BYP)
- 6) cycle D1BYP to zero field

THE SOLUTION

use of sequencer (to be implemented):

sequences are written and tested by experts

operator starts the sequencer by selecting a file and
the corresponding sequence

Other features

File classification

temp file: for temporary data or scratch data or data was edited/changed
(beam is off or some systems are off)

normal file: there is beam (good transmission)

reference file: official file for routine operation
(a coordinator recommends the use of this file)

special file: special settings for machine studies, tests, etc.

optics file: values calculated from optics programs

Useful data missing in the files?

cycling status → magnetic field reproducibility

toroid values → bunch charge transmission

photomultipliers → beam losses

... and more

THE SOLUTION:

the parameter list can be extended by system experts

the parameter are grouped:

Magnets, MagnetMovers, RF, Laser, Feedbacks, Diagnostics

each group has a 'template file'

template file contains a list of parameters to save

Summary and outlook

- a new file system is being developed in a MCS-MPY collaboration
- it is 'universal' : same for all machines (rings and linacs)
- FLASH can already now profit from it (partially)
- feedback (bug reports, ideas) from users is very welcome

Main features:

- easy to search for files
- compare file-to-present status or file-to-file
- run procedures (with the sequencer)
- run in Unix, Linux, Windows, ... (at the moment only in Sun)

Thank you for your attention

pedro.castro@desy.de