

Software for simultaneous degaussing of magnets

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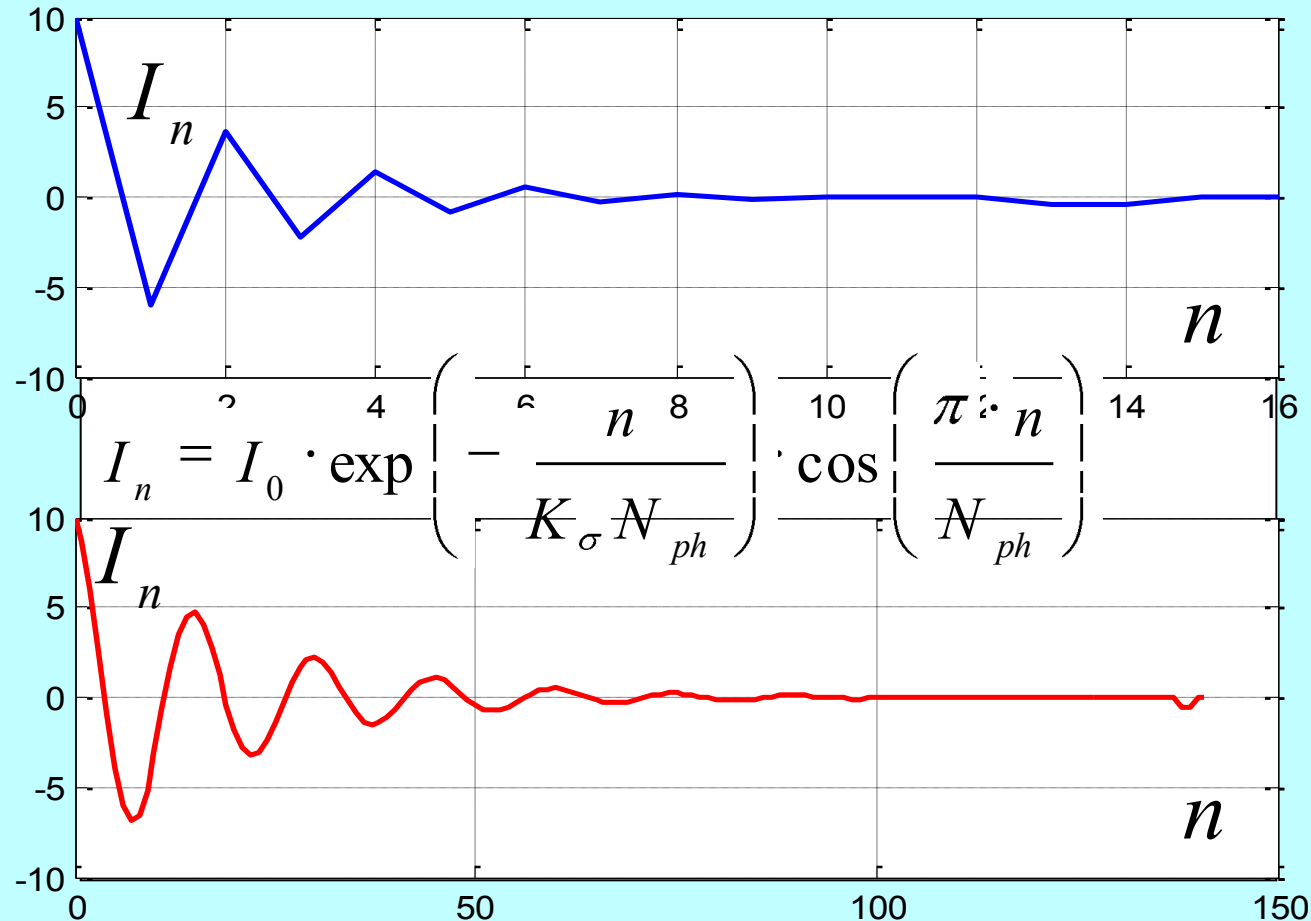
Introduction

- Instead of usage of many scripts for magnets degaussing a program created, which degausses many magnets simultaneously. And this makes possible to control the communications with servers. Due to this fact some old unlikely things disappeared.
- Easy to use. Instead of running all scripts (by pushing buttons or in other way) one can run this program using “ini” file, which includes all the magnets to be degaussed or just giving magnets to program us arguments.
`./Degausser -i Ini1.ini`
`./Degausser HIGH1.Q1 -0.35 HIGH2.Q2 -0.43`
- Difference in degaussing time for old and new procedures.

List of the magnets to be degaussed

N	Magnet Name	Start Current [A]		Penul Current [A]		T[s] (Period)		Step Size[s]		inv dump		Min. Current [A]	
		Fast	Slow	Fast	Slow	Fast	Slow	Fast	Slow	Fast	Slow	Fast	Slow
1	HIGH1.Q1	10		-0.35	-0.5	2	15	0.1		2	20	0.01	
2	HIGH1.Q2	10		-0.43	-0.5	2	15	0.1		2	20	0.01	
3	HIGH1.Q3	10		-0.35	-0.5	2	15	0.1		2	20	0.01	
4	HIGH1.Q4	10		-0.43	-0.5	2	15	0.1		2	20	0.01	
5	DISP2.QUAD1	16		0		2		0.1		2		0.01	
6	HIGH1.Q5	10		-0.22	-0.5	2	15	0.1		2	20	0.01	
7	HIGH1.Q6	10		-0.22	-0.5	2	15	0.1		2	20	0.01	
8	LOW.DIPOLE	-3.5		???	-0.5	???	15	???	0.5	???	25	???	0.005
9	HIGH1.DIPOLE	-160		???	-5	???	2	???	0.5	???	2	???	0.01
10	HIGH2.DIPOLE	-3		???	-0.5	???	15	???	0.1	???	25	???	0.005
11	PST.QM1	10		-0.2		2		0.1		2		0.01	
12	PST.QM2	10		-0.2	-0.5	2	15	0.1		2	20	0.01	
13	PST.QM3	10		-0.2	-0.5	2	15	0.1		2	20	0.01	
14	PST.QT1	10		-0.3	-0.5	2	15	0.1		2	20	0.01	
15	PST.QT2	10		-0.3	-0.5	2	15	0.1		2	20	0.01	
16	PST.QT3	10		-0.3	-0.5	2	15	0.1		2	20	0.01	
17	PST.QT4	10		-0.3	-0.5	2	15	0.1		2	20	0.01	
18	PST.QT5	10		-0.2	-0.5	2	15	0.1		2	20	0.01	
19	PST.QT6	10		-0.3	-0.5	2	15	0.1		2	20	0.01	

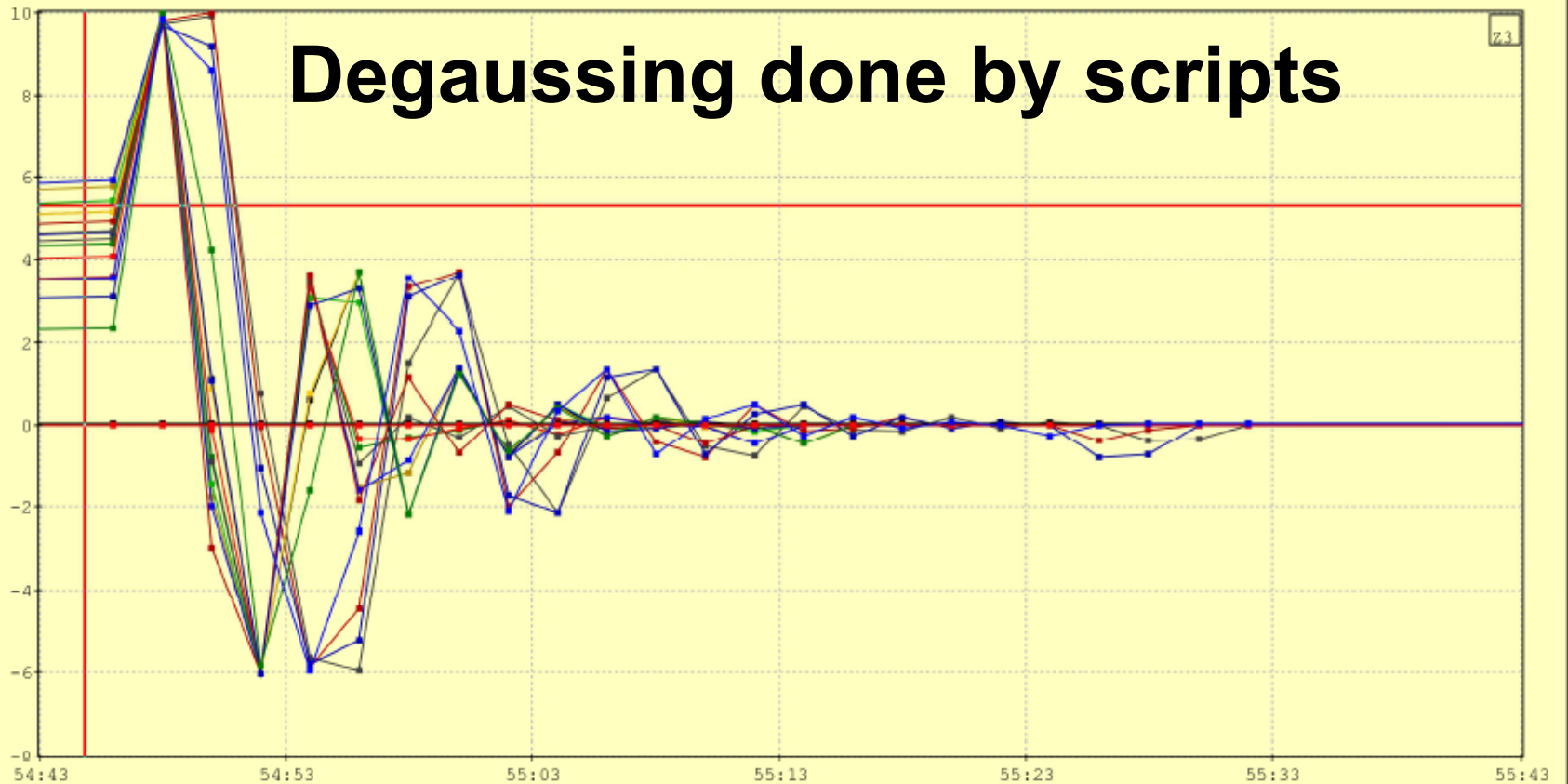
How the graphs for fast and slow degaussing should look like



Parameters of degaussing of new soft

N	Magnet Name	Start Current [A]		Penul Current [A]		Nph		Step Size[s]		K σ		Min. Current [A]	
		Fast	Slow	Fast	Slow	Fast	Slow	Fast	Slow	Fast	Slow	Fast	Slow
1	HIGH1.Q1	10		-0.35	-0.5	1	7.5	0.1		2	2.667	0.01	
2	HIGH1.Q2	10		-0.43	-0.5	1	7.5			2	2.667		
3	HIGH1.Q3	10		-0.35	-0.5	1	7.5			2	2.667		
4	HIGH1.Q4	10		-0.43	-0.5	1	7.5			2	2.667		
5	DISP2.QUAD1	16		0		1				2			
6	HIGH1.Q5	10		-0.22	-0.5	1	7.5			2	2.667		
7	HIGH1.Q6	10		-0.22	-0.5	1	7.5			2	2.667		
8	LOW.DIPOLE	-3.5		???	-0.5	???	7.5	???	0.5	???	3.333	???	0.005
9	HIGH1.DIPOLE	-160		???	-5	???	1	???	0.5	???	2	???	0.01
10	HIGH2.DIPOLE	-3		???	-0.5	???	7.5	???	0.1	???	3.333	???	0.005
11	PST.QM1	10		-0.2		1		0.1		2		0.01	
12	PST.QM2	10		-0.2	-0.5	1	7.5			2	2.667		
13	PST.QM3	10		-0.2	-0.5	1	7.5			2	2.667		
14	PST.QT1	10		-0.3	-0.5	1	7.5			2	2.667		
15	PST.QT2	10		-0.3	-0.5	1	7.5			2	2.667		
16	PST.QT3	10		-0.3	-0.5	1	7.5			2	2.667		
17	PST.QT4	10		-0.3	-0.5	1	7.5			2	2.667		
18	PST.QT5	10		-0.2	-0.5	1	7.5			2	2.667		
19	PST.QT6	10		-0.3	-0.5	1	7.5			2	2.667		

Degaussing done by scripts



Thu Dec 08 10:54:43 CET 2011

60 Second

Time: 08.12.2011 10:54:44.000

UTC: 1323338084

Status	Property [Device]	Value	Description
OK	Magnets.RDBK[HIGH1.DIPO...]	9.93E-03 Amps	Magnets Read Ba...
OK	Magnets.RDBK[HIGH1.Q3]	4.49 Amps	Magnets Read Ba...
OK	Magnets.RDBK[HIGH1.Q4]	3.58 Amps	Magnets Read Ba...

Refresh All

Remove Selected

Remove All

Time Span

Configurations

Selector

Chart & Trace

View & Kino

Max 0.00

TimeLin

Chart Scale

ChubbyLines

Min 0.00

-Scale

Show Grid

Apply Scale

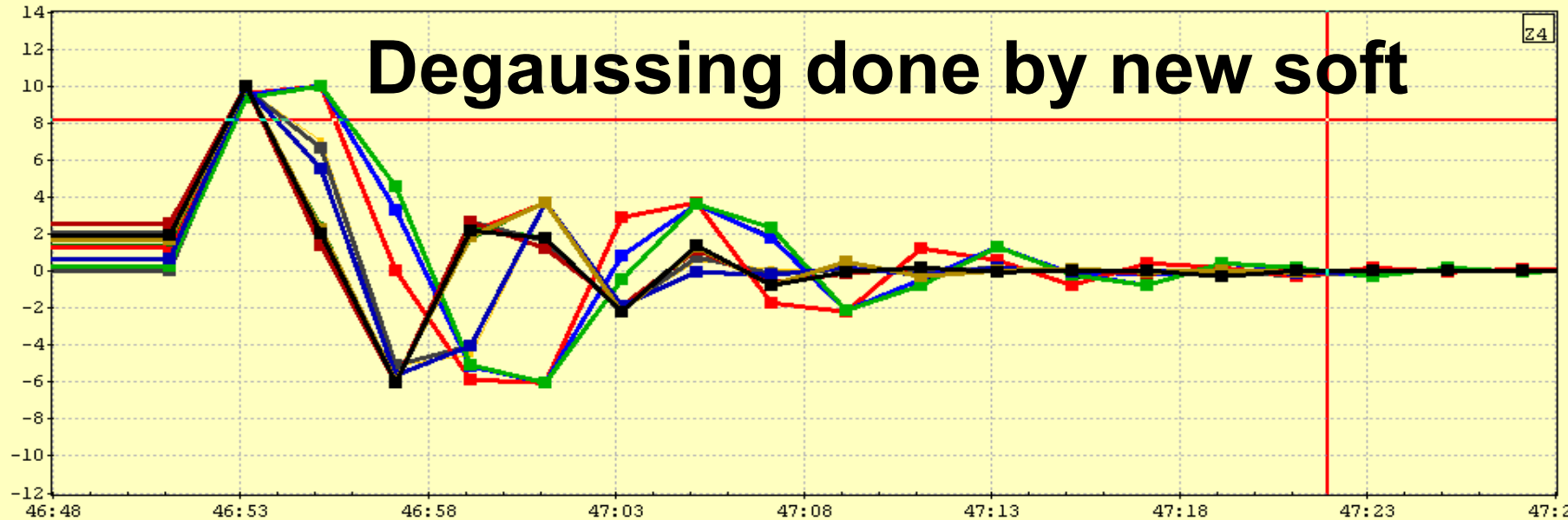
Max 10.00

Best Scale

History Mode

Live Mode

Degaussing done by new soft



Fri Dec 09 16:46:48 CET 2011

40 Seconds

Time: 09.12.2011 16:47:22.000

UTC: 1323445642

Status	Property [Device]	Value	Description
OK	Magnets.RDBK[HIGH1.Q1]	0.11 Amps	Magnets Read Bac...
OK	Magnets.RDBK[HIGH1.Q2]	-0.29 Amps	Magnets Read Bac...
OK	Magnets.RDBK[HIGH1.Q3]	0.08 Amps	Magnets Read Bac...
OK	Magnets.RDBK[HIGH1.Q4]	0.15 Amps	Magnets Read Bac...
OK	Magnets.RDBK[HIGH1.Q5]	-7.44E-04 Amps	Magnets Read Bac...
OK	Magnets.RDBK[HIGH1.Q6]	-3.73E-04 Amps	Magnets Read Bac...
OK	Magnets.RDBK[PST.QM1]	-0.13 Amps	Magnets Read Bac...
OK	Magnets.RDBK[PST.QM2]	-0.08 Amps	Magnets Read Bac...
OK	Magnets.RDBK[PST.QM3]	-0.07 Amps	Magnets Read Bac...
OK	Magnets.RDBK[PST.QT1]	0.00 Amps	Magnets Read Bac...
OK	Magnets.RDBK[PST.QT2]	-0.30 Amps	Magnets Read Bac...
OK	Magnets.RDBK[PST.QT3]	7.45E-04 Amps	Magnets Read Bac...
OK	Magnets.RDBK[PST.QT4]	0.00 Amps	Magnets Read Bac...
OK	Magnets.RDBK[PST.QT5]	-0.03 Amps	Magnets Read Bac...
OK	Magnets.RDBK[PST.QT6]	-0.30 Amps	Magnets Read Bac...

Refresh All Remove Selected Remove All

Time Span Configurations Selector Chart & Trace View & Kino

Subsystem: ALL

- Laser.NPulses
- Laser.Attenuator
- Magnets.RDBK
- Magnets.Main.Readback
- Magnets.Main.Setpoint
- Magnets.SetPoint
- Magnets.Steer.Readback
- Magnets.Steer.Setpoint
- Mirror.X
- Mirror.Y
- Mirror.X.Abs
- Mirror.Y.Abs

Magnets Read Back Value

Device Name: PST.QT6

Selected Bit: ALL

Add Selected

History Mode Live Mode



About config files

In the future for not changing anything in the source code, and this means for not being forced to recompile the code, some parameters those can be reconsidered (due to some reasons) are outsourced to config file. Config file that is necessary for running program is: “**../Configs/Degausser.config**”. If due to some reasons file doesn't exist, then during running the program message will be received about not existing of config.

```
[blade83] .../DeGausserGUI % ./Degausser HIGH1.Q1 -0.35
```

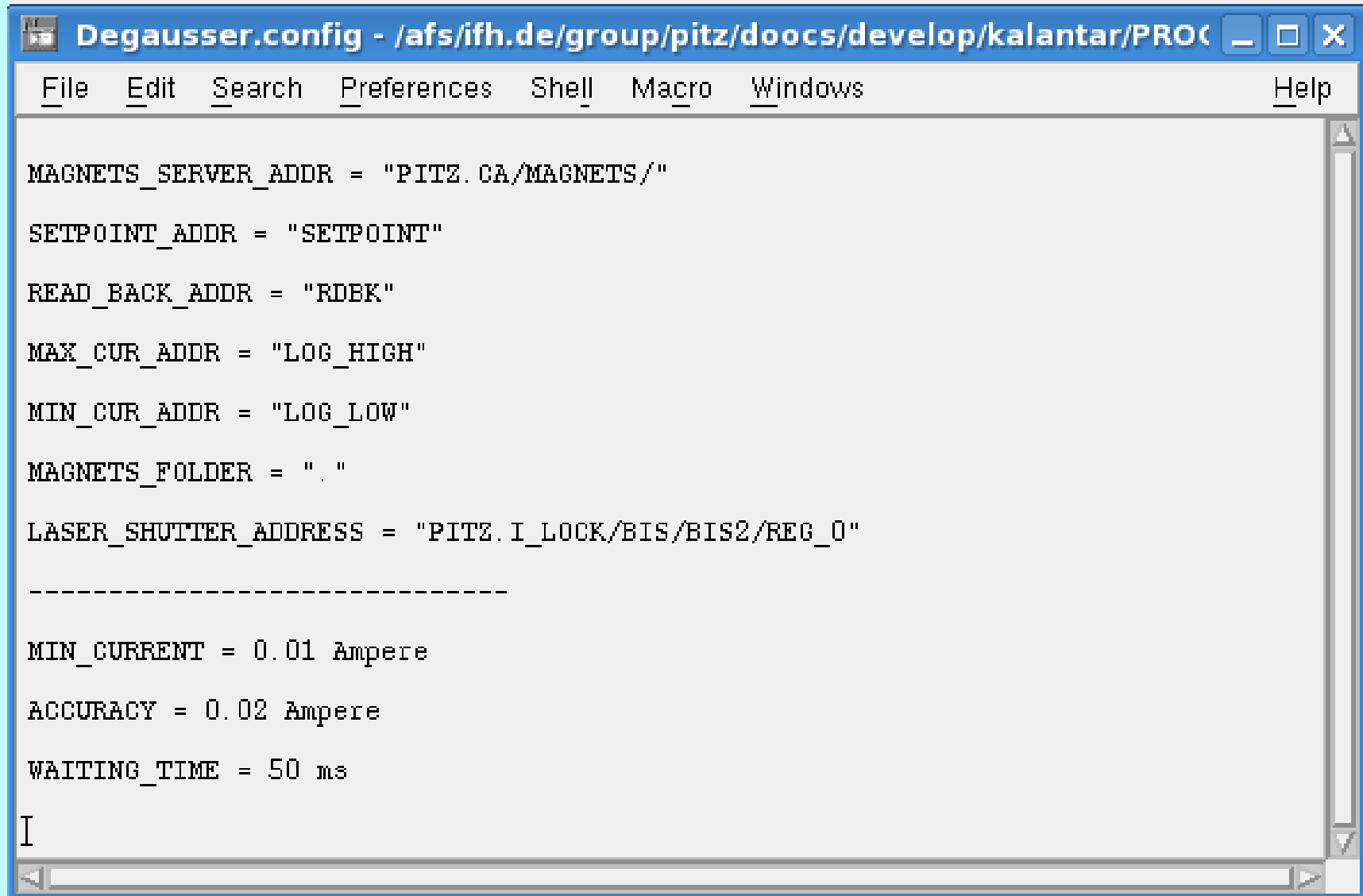
```
../Configs/Degausser.config file doesn't exist
```

```
[blade83] .../DeGausserGUI %
```

Message



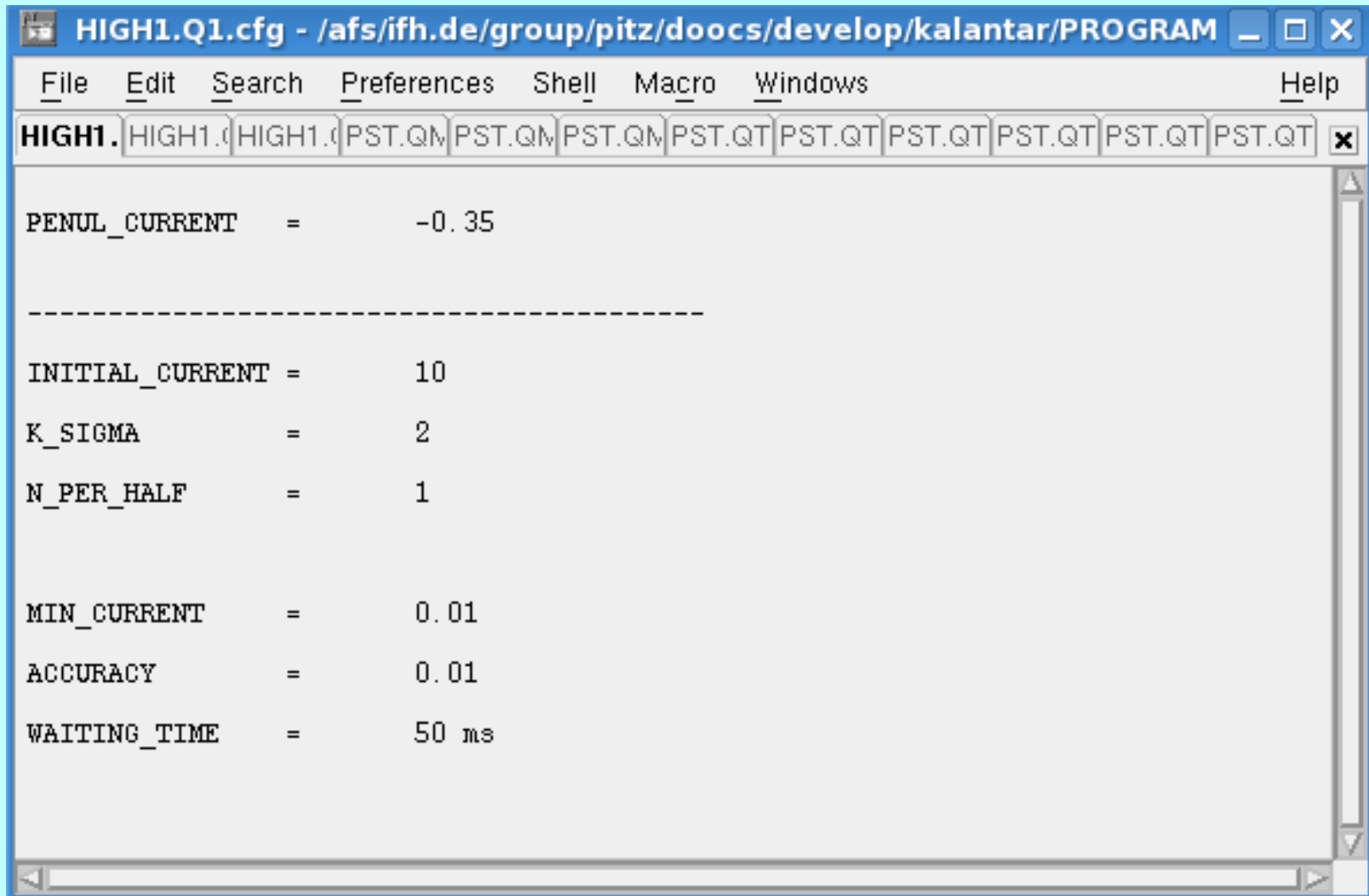
Main config file



The image shows a screenshot of a text editor window titled "Degausser.config - /afs/afh.de/group/pitz/doocs/develop/kalantar/PROG". The window has a menu bar with "File", "Edit", "Search", "Preferences", "Shell", "Macro", "Windows", and "Help". The main text area contains the following configuration parameters:

```
MAGNETS_SERVER_ADDR = "PITZ.CA/MAGNETS/"  
  
SETPOINT_ADDR = "SETPOINT"  
  
READ_BACK_ADDR = "RDBK"  
  
MAX_CUR_ADDR = "LOG_HIGH"  
  
MIN_CUR_ADDR = "LOG_LOW"  
  
MAGNETS_FOLDER = "."  
  
LASER_SHUTTER_ADDRESS = "PITZ.I_LOCK/BIS/BIS2/REG_0"  
  
-----  
  
MIN_CURRENT = 0.01 Ampere  
  
ACCURACY = 0.02 Ampere  
  
WAITING_TIME = 50 ms  
  
I
```

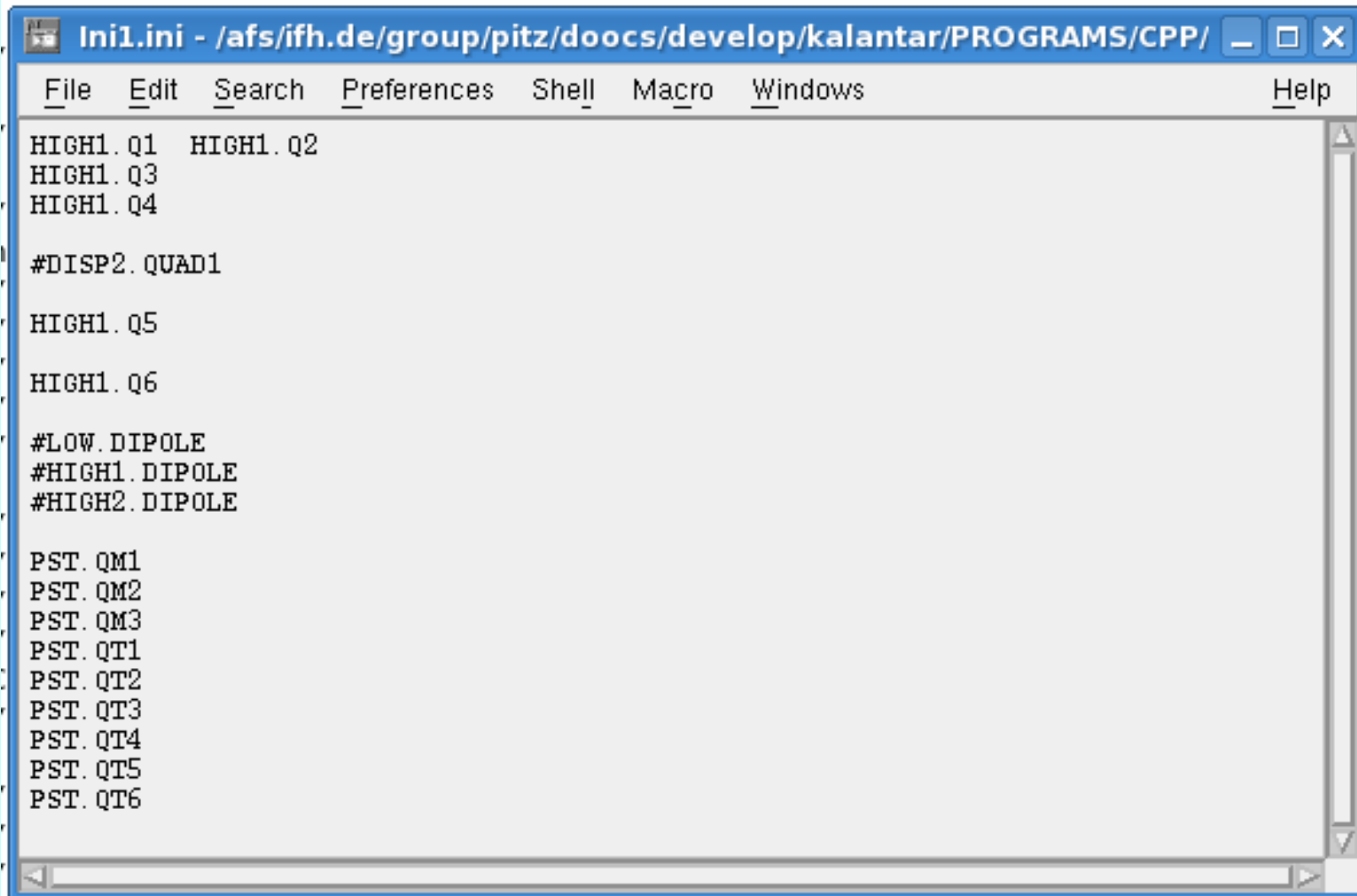
Example of magnet config file



The image shows a screenshot of a text editor window titled "HIGH1.Q1.cfg - /afs/afh.de/group/pitz/doocs/develop/kalantar/PROGRAM". The window has a menu bar with "File", "Edit", "Search", "Preferences", "Shell", "Macro", "Windows", and "Help". The main text area contains the following configuration parameters:

```
PENUL_CURRENT = -0.35  
  
-----  
INITIAL_CURRENT = 10  
K_SIGMA = 2  
N_PER_HALF = 1  
  
MIN_CURRENT = 0.01  
ACCURACY = 0.01  
WAITING_TIME = 50 ms
```

Example of ini file

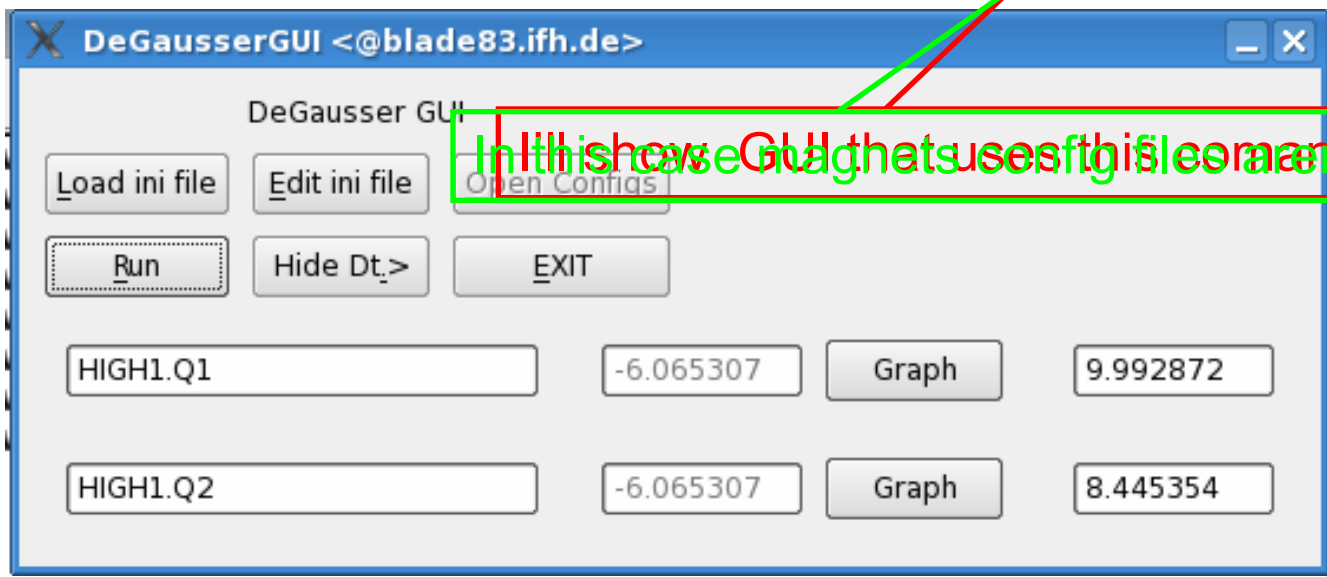


The image shows a screenshot of a text editor window titled "Ini1.ini - /afs/afh.de/group/pitz/doocs/develop/kalantar/PROGRAMS/CPP/". The window has a menu bar with "File", "Edit", "Search", "Preferences", "Shell", "Macro", "Windows", and "Help". The main text area contains the following configuration parameters:

```
HIGH1.Q1 HIGH1.Q2  
HIGH1.Q3  
HIGH1.Q4  
  
#DISP2.QUAD1  
  
HIGH1.Q5  
  
HIGH1.Q6  
  
#LOW.DIPOLE  
#HIGH1.DIPOLE  
#HIGH2.DIPOLE  
  
PST.QM1  
PST.QM2  
PST.QM3  
PST.QT1  
PST.QT2  
PST.QT3  
PST.QT4  
PST.QT5  
PST.QT6
```

Examples of running program

```
Help
GRAMS/CPP/Works/DeGausser/DeGausserGUI %
GRAMS/CPP/Works/DeGausser/DeGausserGUI %
GRAMS/CPP/Works/DeGausser/DeGausserGUI % ./Degausser -i ../Configs/Ini2.ini
GRAMS/CPP/Works/DeGausser/DeGausserGUI %
GRAMS/CPP/Works/DeGausser/DeGausserGUI %
GRAMS/CPP/Works/DeGausser/DeGausserGUI % ./Degausser HIGH1.Q1 -0.35 HIGH1.Q2 -0.43
GRAMS/CPP/Works/DeGausser/DeGausserGUI %
GRAMS/CPP/Works/DeGausser/DeGausserGUI % █
```



In this case GUI that uses this command needed

**Thanks to Levon for helping to run scripts and to
debug program**

Thanks to Bagrat for good advices

**Thanks to Dmitriy for helpful discussion
connected to degaussing**

Thank you for your attention !