

New release of degasser software

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Comparison of old and new degausser procedures

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Why new procedure is created

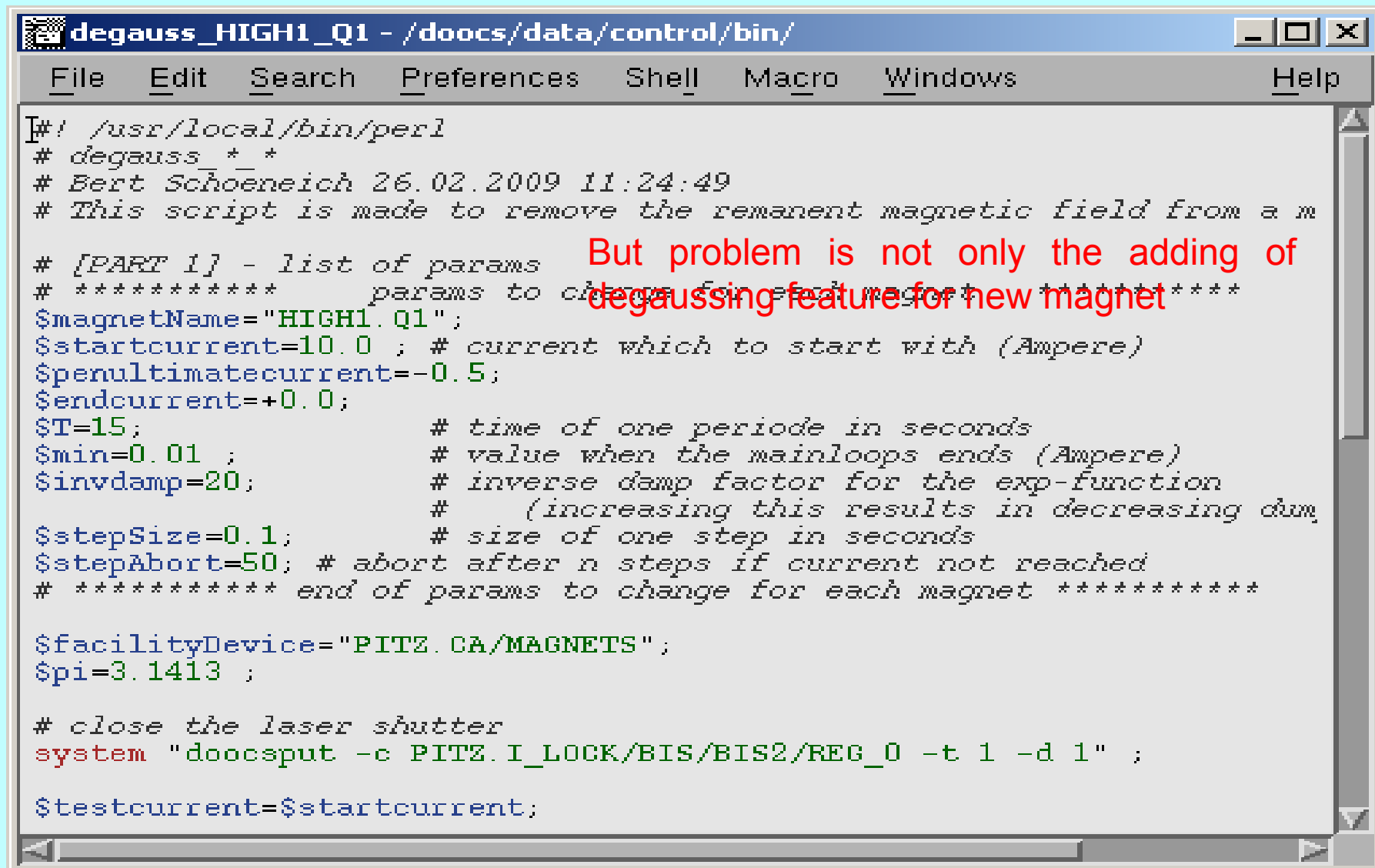
Scripts for degaussing magnets are fine. Usually they degauss magnets as expected.

Then why new procedure for degaussing is needed?

In the case of scripts every magnet has at least one script for degaussing. Some magnets have 2 scripts (one for fast degaussing and one for slow degaussing).

If there is a need to add new magnet degaussing feature, then at least one new script must be written.

Why new procedure is created



```
degauss_HIGH1_Q1 - /doocs/data/control/bin/
File Edit Search Preferences Shell Macro Windows Help
[#! /usr/local/bin/perl
# degauss_*_*
# Bert Schoeneich 26.02.2009 11:24:49
# This script is made to remove the remanent magnetic field from a m

# [PART 1] - list of params
# ***** params to change for each magnet *****
$magnetName="HIGH1.Q1";
$startcurrent=10.0 ; # current which to start with (Ampere)
$penultimatecurrent=-0.5;
$endcurrent=+0.0;
$T=15; # time of one periode in seconds
$min=0.01 ; # value when the mainloops ends (Ampere)
$invdamp=20; # inverse damp factor for the exp-function
# (increasing this results in decreasing dumm
$stepSize=0.1; # size of one step in seconds
$stepAbort=50; # abort after n steps if current not reached
# ***** end of params to change for each magnet *****

$facilityDevice="PITZ.CA/MAGNETS";
$pi=3.1413 ;

# close the laser shutter
system "doocsput -c PITZ.I_LOCK/BIS/BIS2/REG_0 -t 1 -d 1" ;

$testcurrent=$startcurrent;
```

But problem is not only the adding of degaussing feature for new magnet

Why new procedure is created

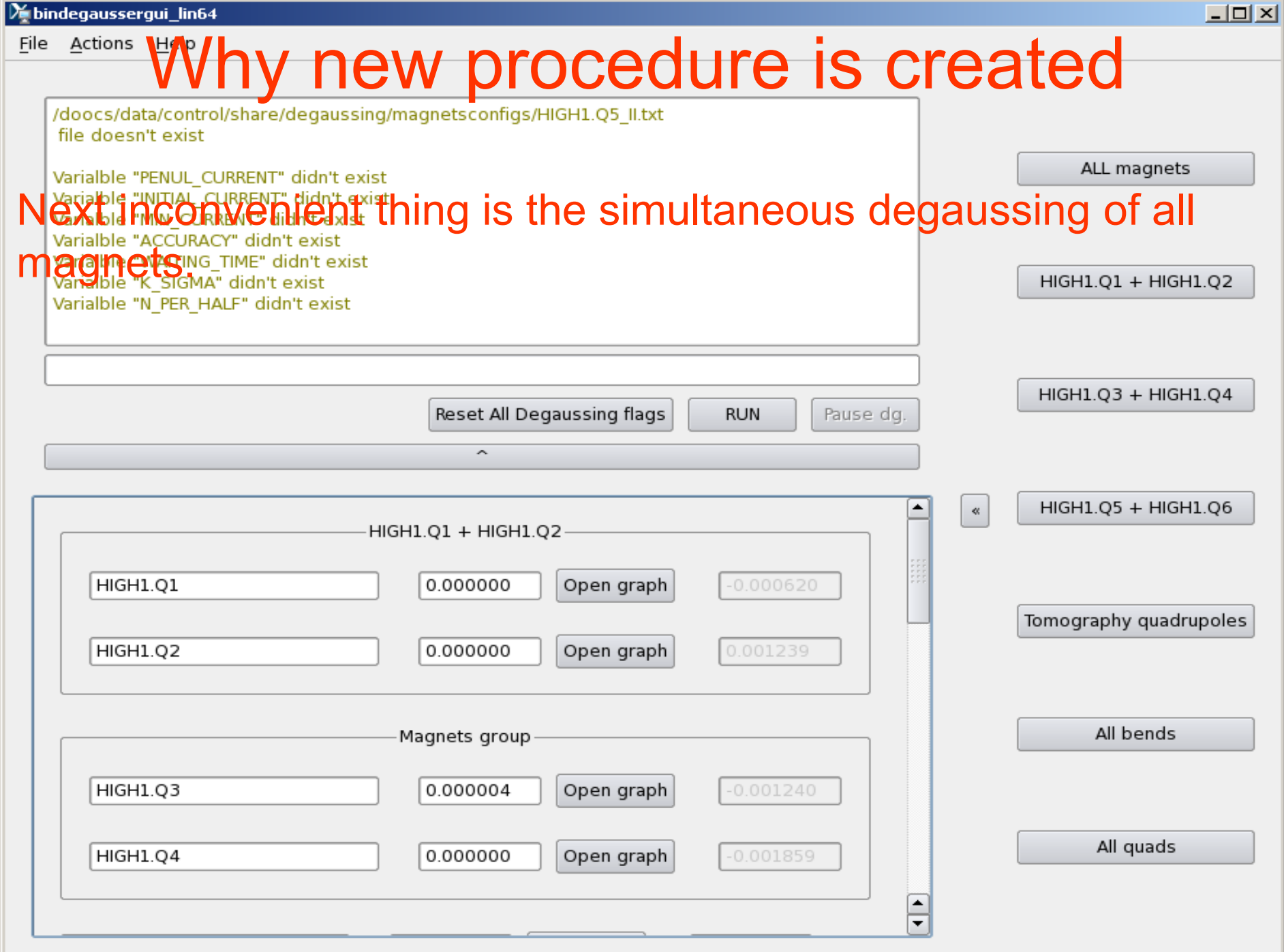
Currently for 19 magnets there are ~30 scripts for degaussing.
Each script has

- a) Magnet server address
- b) Laser shutter address
- c) Read back address
- d) Set point address
- e) Initial current value (and no possibility to cut of this value with maximum allowed current for magnet (and this caused to some problems in the end of last year))

Now imagine that something is changed, then one needs to open all scripts and do corresponding changes.

Why new procedure is created

Next inconvenient thing is the simultaneous degaussing of all magnets.



PITZ magnets - degaussing the quads

HIGH1.Q1 0.00000 HIGH1.Q1/RDBK -0.00062 degauss HIGH1.Q1	M1 M1/SETPOINT 0.00000 ST.QM1/RDBK 0.00112 degauss PST.QM1
HIGH1.Q2 0.00000 HIGH1.Q2/RDBK 0.00186 degauss HIGH1.Q2	M2 M2/SETPOINT 0.00000 ST.QM2/RDBK -0.00074 degauss PST.QM2 + *.QM3
HIGH1.Q3 0.00000 HIGH1.Q3/RDBK -0.00124 degauss HIGH1.Q3	T1 T1/SETPOINT 0.00000 ST.QT1/RDBK -0.00149 degauss PST.QT1 + *.QT2
HIGH1.Q4 0.00000 HIGH1.Q4/RDBK -0.00186 degauss HIGH1.Q4	T3 T3/SETPOINT 0.00000 ST.QT3/RDBK -0.00075 degauss PST.QT3 + *.QT4
HIGH1.Q5 0.00000 HIGH1.Q5/RDBK -0.00074 degauss HIGH1.Q5	T5 T5/SETPOINT 0.00000 ST.QT5/RDBK -0.00037 degauss PST.QT5 + *.QT6
DISP2.QUAD1 0.00000 DISP2.QUAD1/RDBK 0.00186 degaussing DISP2.QUAD1	

degaussing script

show degaussing script

show degaussing script

show degaussing script

show degaussing script

show degaussing script

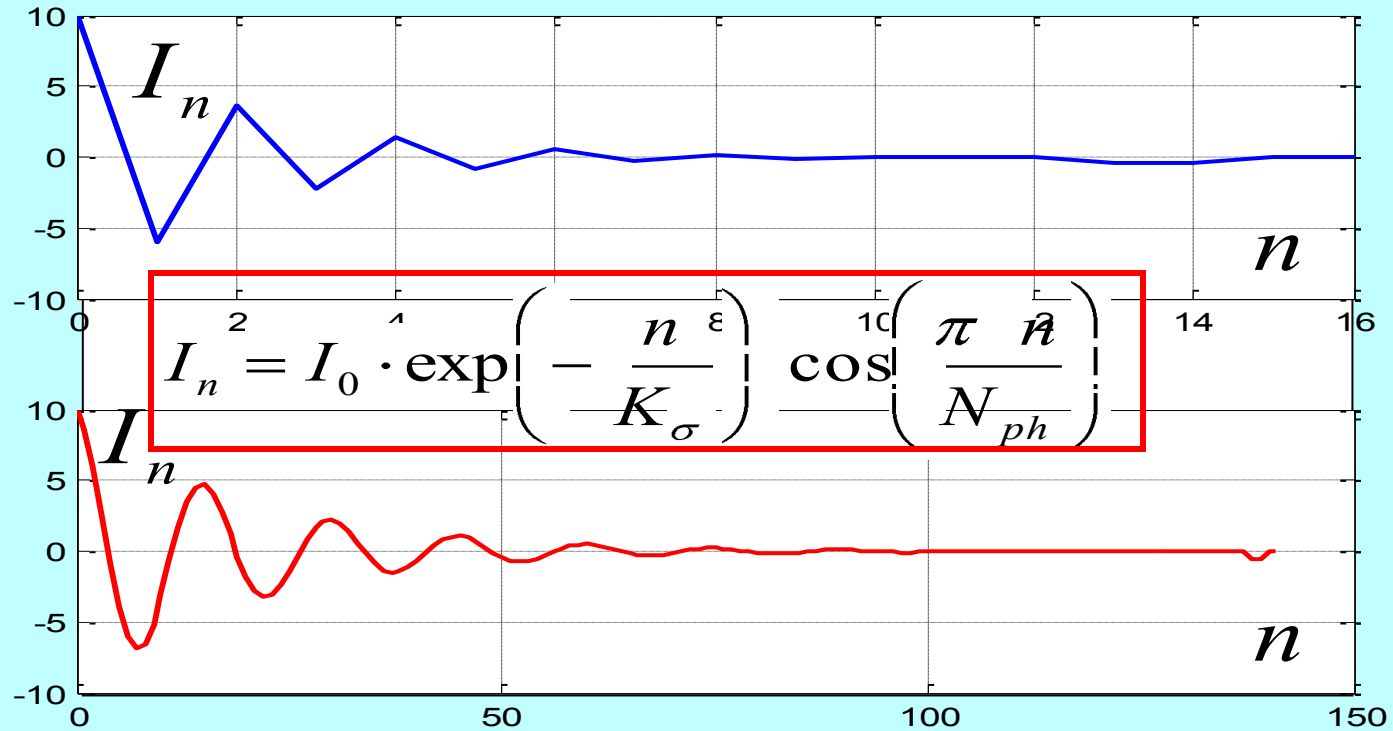
PITZ magnets - degaussing the dipole

When degaussing is starting, the laser should be turned off

LOW.DIPOLE 0.00000 LOW.DIPOLE/SETPOINT 0.00000 LOW.DIPOLE/RDBK -0.00025	start fast degaussing fast degaussing period
HIGH1.DIPOLE 0.00000 HIGH1.DIPOLE/SETPOINT 0.00000 HIGH1.DIPOLE/RDBK 0.00000	start fast degaussing fast degaussing period
HIGH2.DIPOLE ... HIGH2.DIPOLE/SETPOINT ... HIGH2.DIPOLE/RDBK ...	start fast degaussing fast degaussing period

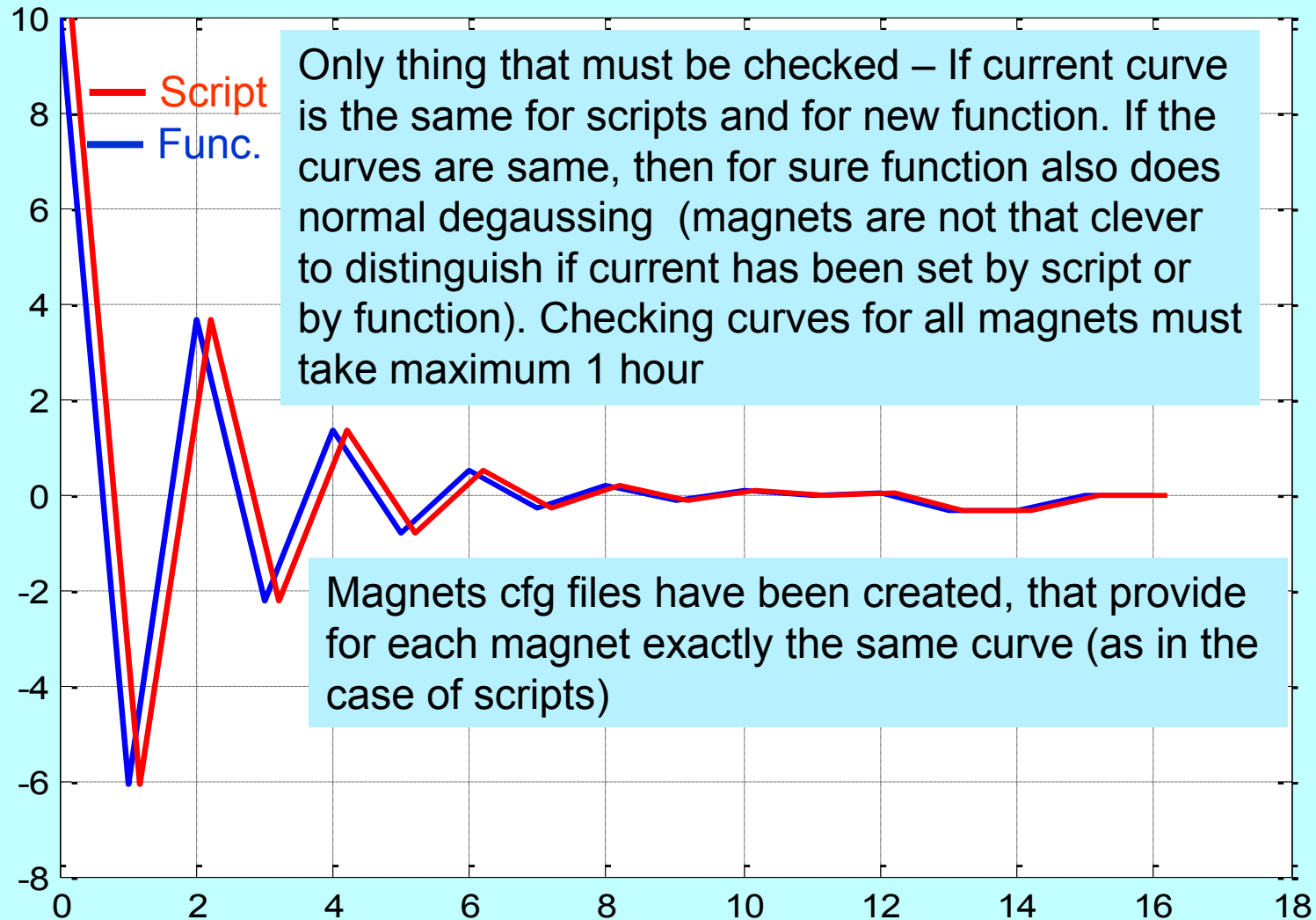
Conclusion:

There are many scripts, but all the scripts do the same job.
They change current by this low



It is obvious, that more convenient approach is to have one single (and simple) function for degaussing of all magnets

What is the meaning of testing degaussing procedure?



If for scripts every parameter is checked, then there is no necessity to re check them again for single function!

Degaussing parameters of magnets

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	

Comments on these procedures

All comments are related to gui. Many comments have been taken into account to improve gui (thanks for comments).

Sometimes the comments are very fanny. For example

- “If magnet server was switched off, then gui didn't work normal” or

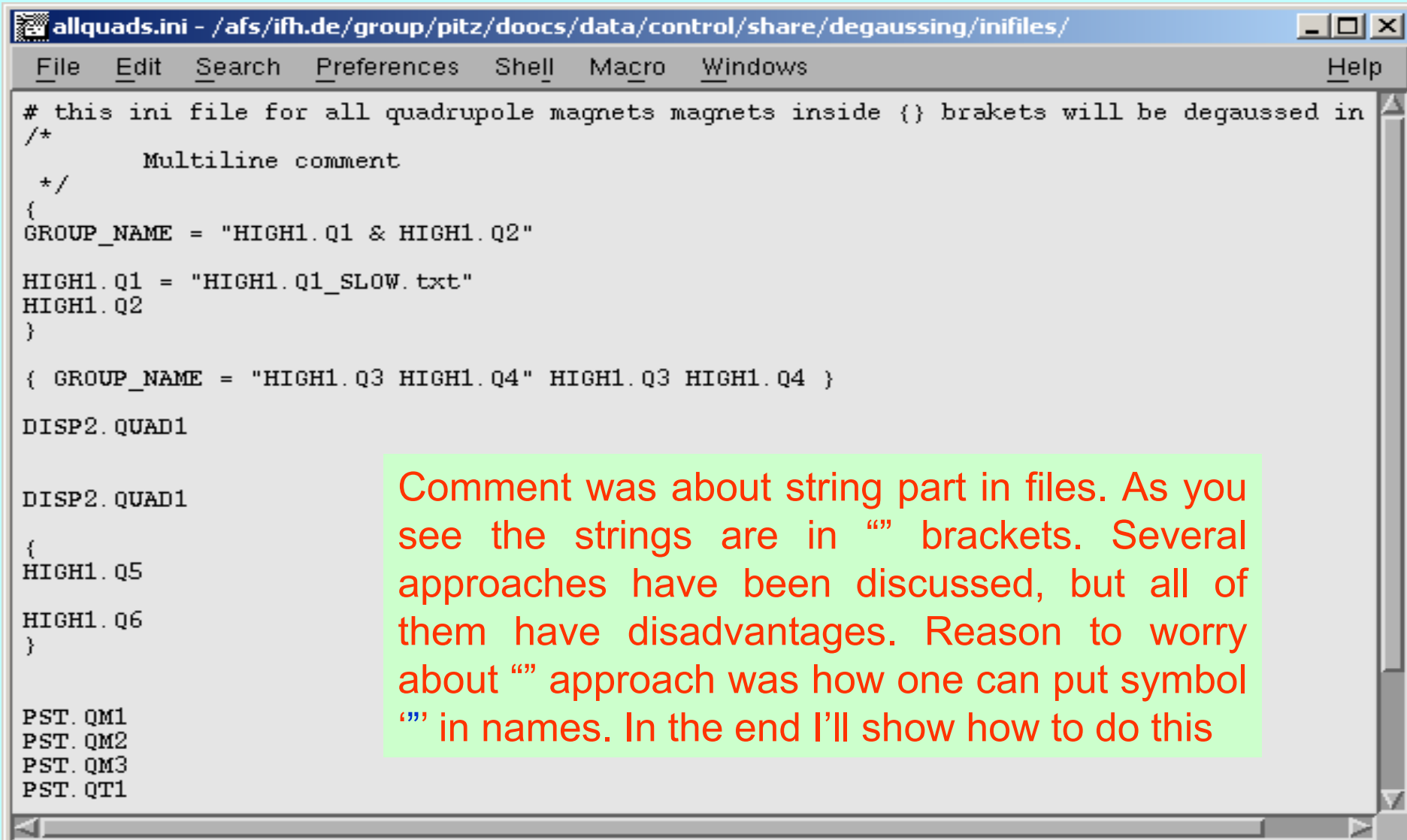
- “Program hanged because of trying load new magnets when degaussing ongoing” (picture of this case one can find in PITZ logbook).

Program doesn't handle every critical situation!!! For example if during degaussing by some reasons PC will be turned off, again degaussing will not be completed, etc.

Usage of gui does not depend on inreaching of gui or handling new bad situations!

Comments on these procedures

Another comment was about parsing ini and cfg files.



```
allquads.ini - /afs/ihf.de/group/pitz/doocs/data/control/share/degaussing/inifiles/
File Edit Search Preferences Shell Macro Windows Help
# this ini file for all quadrupole magnets magnets inside {} brackets will be degaussed in
/*
    Multiline comment
*/
{
GROUP_NAME = "HIGH1.Q1 & HIGH1.Q2"

HIGH1.Q1 = "HIGH1.Q1_SLOW.txt"
HIGH1.Q2
}

{ GROUP_NAME = "HIGH1.Q3 HIGH1.Q4" HIGH1.Q3 HIGH1.Q4 }

DISP2.QUAD1

DISP2.QUAD1

{
HIGH1.Q5

HIGH1.Q6
}

PST.QM1
PST.QM2
PST.QM3
PST.QT1
```

Comment was about string part in files. As you see the strings are in "" brackets. Several approaches have been discussed, but all of them have disadvantages. Reason to worry about "" approach was how one can put symbol "" in names. In the end I'll show how to do this

Outlook

In currently existing magnets cfg files the parameters are corresponding to scripts parameters. This means, that no tests are needed (if parameters have been already tested for scripts). But if it is needed I can recheck all parameters for all magnets. In case for any parameter we find a better value (better perturbation current), then the new value should be included in scripts as well as in new cfg files. 1 working day (tunnel access) should be enough for rechecking all parameters of all magnets.

Thank you for your attention !