



Establishment of SNUG Developer's Working Group

An (Joseph) Vu

San Francisco VA Health Care System

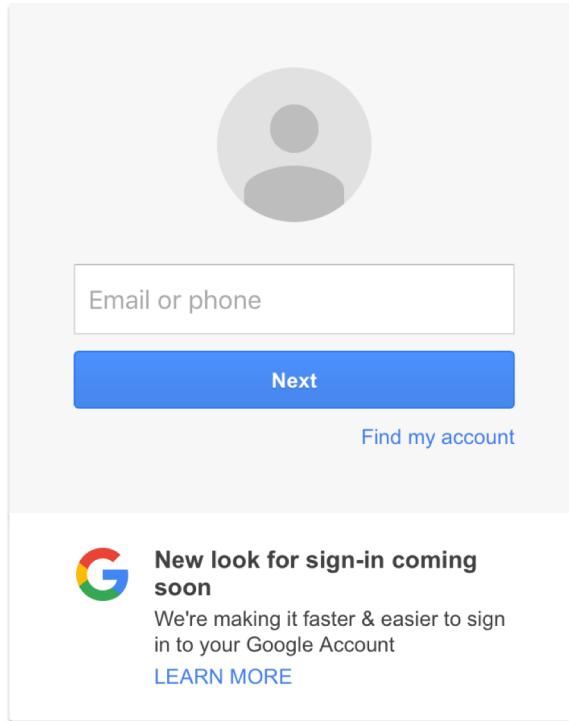
Center for Imaging of Neurodegenerative Diseases

SNUG Developer's Working Group

- The purpose of this group is to provide a local resource for information regarding pulse sequence and reconstruction development and foster collaborations between SNUG institutions. (snug_dev@lists.berkeley.edu)
- To join, email me: anvu@berkeley.edu
 - Your email address must be registered with a gmail account.

Creating a google account with non-google email address

Sign in with your Google Account



Create account

One Google Account for everything Google



Create your Google Account

Name

First

Last

Choose your username

@gmail.com

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Create a password

Confirm your password

Birthday

 Month Day Year

Gender

 I am...

Mobile phone

Your current email address

Location

 United States [Next step](#)

Create your Google Account

Name

First

Last

Your email address

[I would like a new Gmail address](#)

Create a password

Confirm your password

Birthday

 Month Day Year

Gender

 I am...

Mobile phone

Location

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[failed to compile so file \[error message:you are out of configuration..\]](#)
Now I'm trying to compile so file (mc 4), but I have a problem as follow: ... Let me inform what I did after looking the solutions in discussion board. ... 1) I checked and set up the virtual ...
Authors: Kisoo Kim Date: 4/9/2017
[https://www.mr-idea.com/communities/idea/Lists/Discussion/failed to compile so file \[error messageyou are out of configuration.\]](https://www.mr-idea.com/communities/idea/Lists/Discussion/failed to compile so file [error messageyou are out of configuration.])

[crdefprot fails for every sequence on VE11C](#)
I have recently transformed an svs_st-derived sequence from VB17 to VE11C. I am able to create a protocol for it with mp and I can successfully simulate the sequence with POET both ...
Authors: Ferenc Emil Mozes Date: 4/6/2017
<https://www.mr-idea.com/communities/idea/Lists/Discussion/crdefprot fails for every sequence on VE11C>

[image reconstruction failed after additional loops added in FLASH under VE11A](#)
I added two additional loops to the FLASH in VE11A (Ida and Set). With the help I got here the sequence passed unit test. When I tested it on scanner, I found the standard ICE does not ...
Authors: Yuan Le Date: 4/6/2017
<https://www.mr-idea.com/communities/idea/Lists/Discussion/image reconstruction failed after additional loops added in FLASH under VE11A>

[.so file compile error](#)
I am trying to compile linux file (.so), but I got a common error about mount error (13): permission denied as follow: ... Indeed, I found many solution for this, but it doesn't help to ...
Authors: Kisoo Kim Date: 4/5/2017
<https://www.mr-idea.com/communities/idea/Lists/Discussion/.so file compile error>



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Authors: Mark Brown Date: 11/18/2016 Size: 2MB

<https://www.mr-idea.com/communities/idea/Lists/Siemens/Forms/DispForm.aspx?ID=442> [Other Miscellaneous Topics](#)

not applicable

Authors: Mark Brown Date: 11/18/2016 Size: 1MB

<https://www.mr-idea.com/communities/idea/Lists/Siemens/Forms/DispForm.aspx?ID=441> [Medmake SDE](#)

not applicable

Authors: Mark Brown Date: 11/18/2016 Size: 409KB

<https://www.mr-idea.com/communities/idea/Lists/Siemens/Forms/DispForm.aspx?ID=440> [IDEA on Scanner](#)

not applicable

Authors: Mark Brown Date: 11/18/2016 Size: 2MB

<https://www.mr-idea.com/communities/idea/Lists/Siemens/Forms/DispForm.aspx?ID=439> [ICE Interface](#)

not applicable

Authors: Mark Brown Date: 11/18/2016 Size: 1MB

<https://www.mr-idea.com/communities/idea/Lists/Siemens/Forms/DispForm.aspx?ID=438> [VE11C - All Documents](#)

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Authors: Mark Brown Date: 9/16/2016



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User Interface Programming

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Sequence Parameters

Pulse sequence parameters can be programmed in two fashions:

- Hard Coded: Parameters values for real time objects are explicit numbers. Changes in parameter values require a recompilation of the source code.
- Variable format: Parameter values for real time objects can be changed by the user prior to run-time.

Most sequences have a combination of these parameter formats. The sequence programmer determines which parameters can be changed by the user.

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Outline

1. Standard User Interface behavior.
2. Adding parameters
 - Long method – programming handler functions
 - Short method – *WIPParameterTool* method
3. Programming Solve Handlers

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Default User Interface Behavior

To enable a standard parameter in *MrProt* (eg, *TE*), specify Hard Limits in *initialize*:

```
{  
    rSeqLim.setTE (0, 100, 100000, 100, 30000); // in us  
}
```



Transversal ...
enc. dir. A >> P ...
...
sampling 0 %
TE 30.0 ms
Averages 1
Concatenations 1
Filter None
Coil elements BC

TE 0.1 Hard limit 30.0 Hard limit 100.0

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Working on MAGNETOM

Helpful Hints

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OUTLINE

- Directories and Useful files
- Measurement Data Retrieval
- Programs

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 [ipRotFlash](#)

not applicable

Authors: Christian Dederer Date: 1/11/2017 Size: 152KB

<https://www.mr-idea.com/communities/idea/Lists/Customer/Forms/DispForm.aspx?ID=556> [multi-band FLASH](#)

Example IDEA FLASH sequence with multi-band RF excitations ...

Authors: Jürgen Finsterbusch Date: 9/22/2016 Size: 4MB

<https://www.mr-idea.com/communities/idea/Lists/Customer/Forms/DispForm.aspx?ID=919> [Invitation to the European IDEA User Group Meeting 20-21 Sept. 2016](#)

Dale, Brian (HC NAM USA DI MR COLLAB) ... On 20-21 September 2016 the next European IDEA User Group Meeting will take place: The Faculty of Psychology and Neuroscience at Maastricht ...

Authors: Brian Dale, Dale, Brian Date: 9/21/2016 Size: 1MB

<https://www.mr-idea.com/communities/idea/Lists/Customer/Invitation to the European IDEA User Group Meeting 2016 layout 2.docx> [mapVBVDTutorial.zip](#)

not applicable ... mapVBVD tutorial, based on mapVBVD_20160905 ... Philipp Ehses

Authors: Philipp Ehses Date: 9/5/2016 Size: 28MB

<https://www.mr-idea.com/communities/idea/Lists/Customer/mapVBVDTutorial.zip> [mapVBVD_20160905.zip](#)

matlab script for reading VA/VB/VD/VE .dat files ...

Authors: Philipp Ehses Date: 9/5/2016 Size: 24KB

https://www.mr-idea.com/communities/idea/Lists/Customer/mapVBVD_20160905.zip [getwix](#)

matlab twix reader for VA, VB, VD/VE with alternated reading and processing of readouts to process large twix files. ...

Authors: Christian Labadie Date: 1/6/2016 Size: 94KB

<https://www.mr-idea.com/communities/idea/Lists/Customer/Forms/DispForm.aspx?ID=915> [Metric Optimized Gating Version 2.7](#)

A Function to Calculate Multi-Band RF Excitations

(VB17)



Jürgen Finsterbusch

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Overview

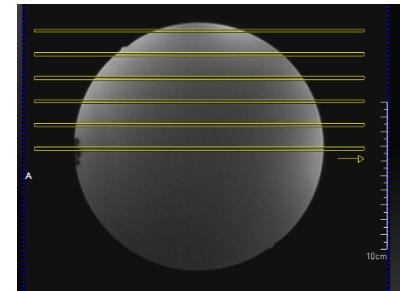


Basic Steps

- user interface
 - multi-band mode
 - number of bands
- RF pulse design
 - combine envelopes with different phase modulations
 - adapt flip angle calculation
- pulse sequence
 - adapt number of slices
(loops, measurement time, RF energy, ...)
 - extra functionality, e.g. for CAIPIRINHA, blipped-CAIPI, etc.
 - pass flags / parameters to ICE
- reconstruction
 - unalias
 - adapt header information (slice position, image number, etc.)



ninPrepMultiBandRFPulse



Implementation



Function

- determine phase modulation per unit distance
- determine maximum difference
- calculate samples

– loops and check

```
// loop over bands (//MB07B)  
for(lcBand=FirstBand; lcBand <= LastBand; lcBand++) { //MB20C
```

```
// determine relevant distance (//MB07C)  
double dDistance = adDistanceOfBands[lcBand];
```

```
// check phase modulation (//MB07D)
```

```
if(flMaxDiffPhase * dDistance > 2*dPi / 3) {  
    cout << "Sampling rate not sufficient! ABORTED!" << endl;  
    return false; }
```

check sampling of phase modulation, performed here to consider distances

```
// add band to multi band (//MB07D)  
for(lcLoop=0;lcLoop<pRFMultiBand->getSamples();lcLoop++) {
```

SEE NEXT SLIDES

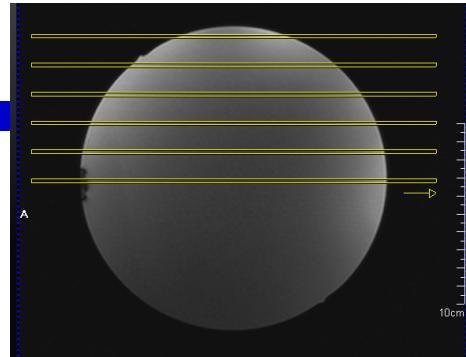
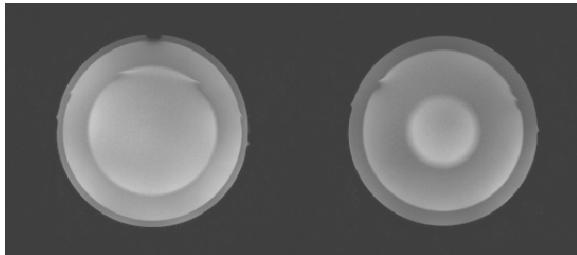
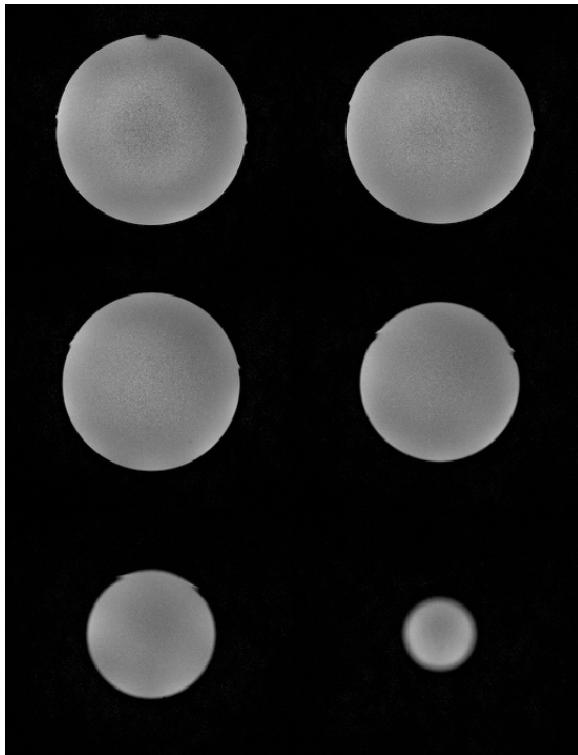
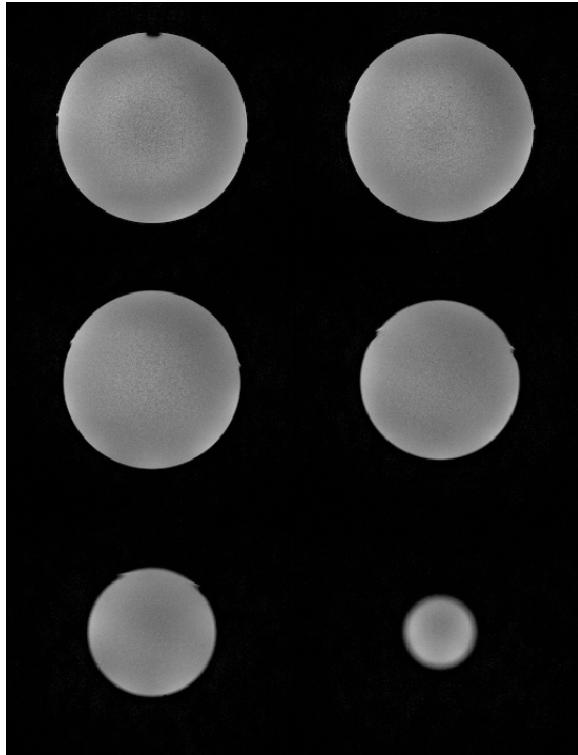
```
} // loop supp points
```

```
} // loop bands
```

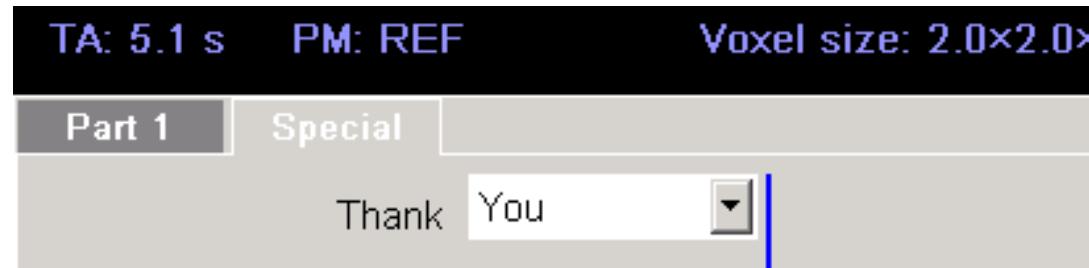
Examples

Images

- single-band vs. 1 (multi-)band vs. 3 bands



The End



Details, Questions & Feedback

- j.finsterbusch@uke.uni-hamburg.de

What else you will need

- IDEA software for your scanner
 - For modifying and compiling pulse sequence and reconstruction source code
 - Requires Master Research Agreement (MRA) between Siemens and your Institution
- Source code
 - Requires MRA Addendum to specify scope and deliverables between Siemens and Institution