

Tutorial for Setting up the NISCI MRI protocol at SIEMENS MRI devices

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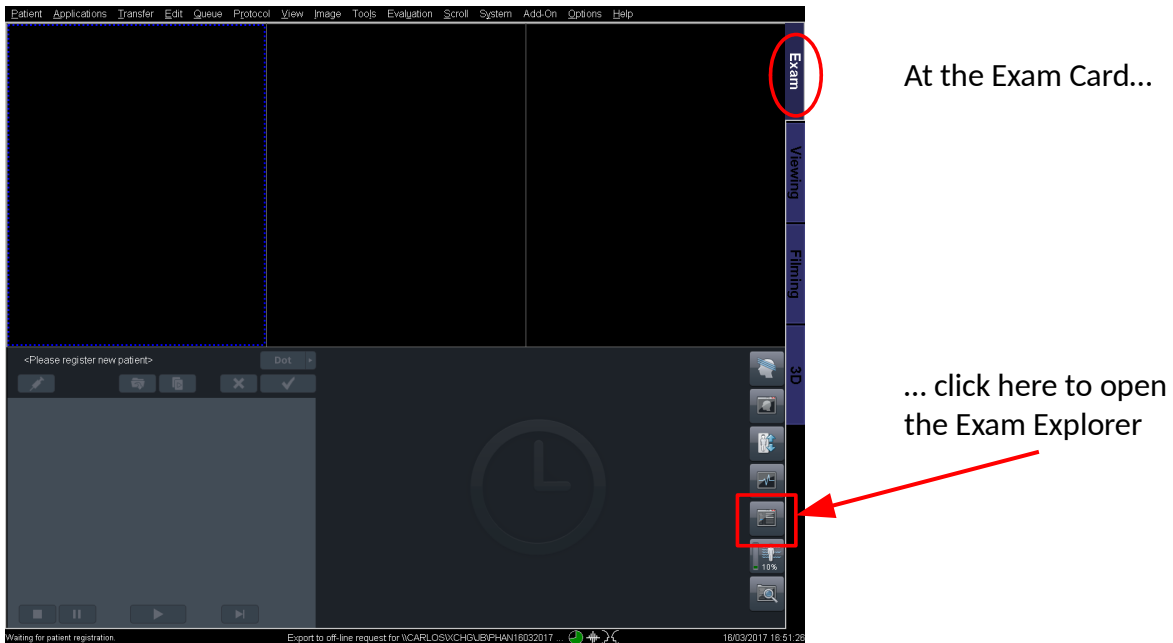
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Version 2, page 1 of 24 (12 double pages)

Outline

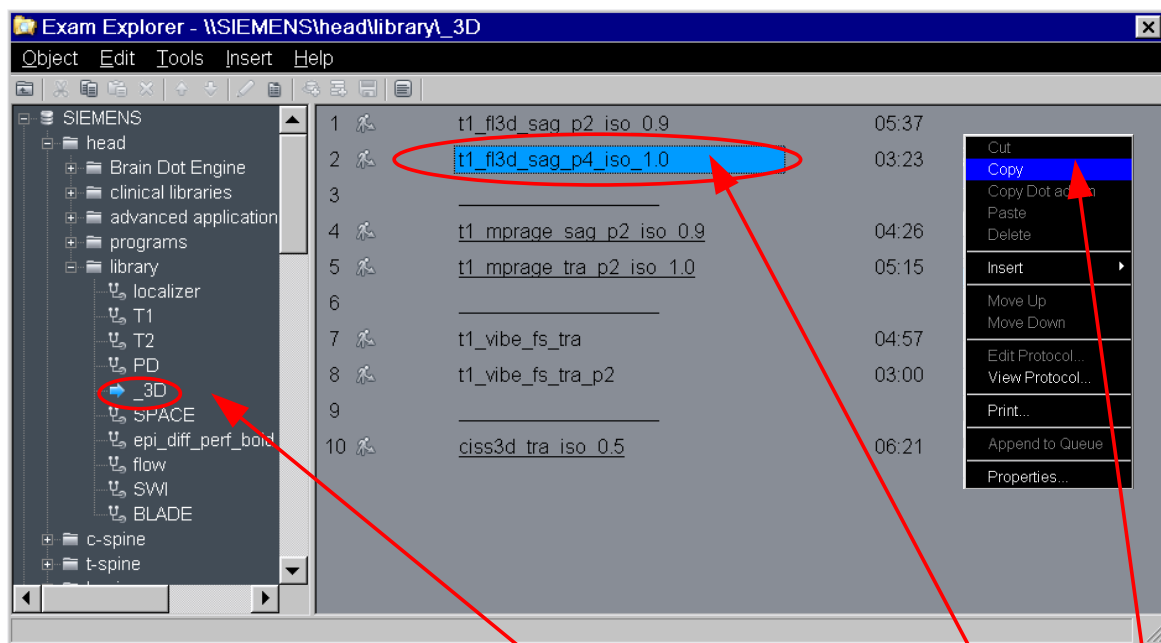
- This tutorial describes the setup process of the NISCI sequences step by step. Please refer to 22.2 MPM iPAT2 (protocol settings) for details.
- You will be guided through the research sequences for multi-parametric mapping, i.e. T1-, PD-, and MT weighted sequences.
- Additional to these RF transmit field and sensitivity mapping sequences will be described.

1. Opening the Exam Explorer



3

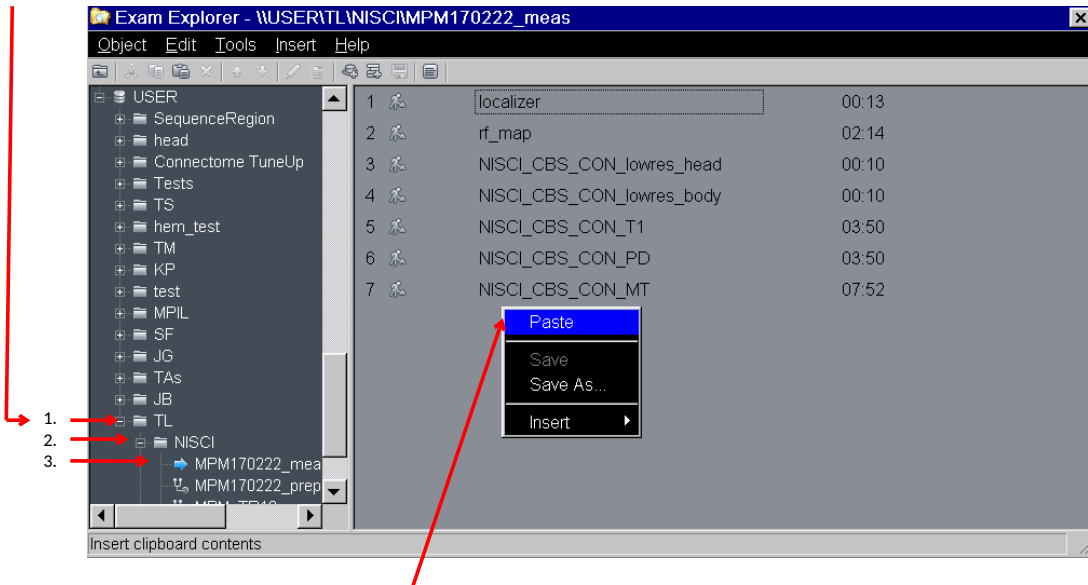
2. Find and Copy the 3D FLASH Sequence from SIEMENS



Within the region head -> library go to the 3D section and right click on the sequence to copy...

3. Insert the Sequence into the USER Region

In the USER region make sure to have a separate folder where you can insert the sequence.
(You have to create three sub objects from the top of the USER tree by right click -> Insert...)

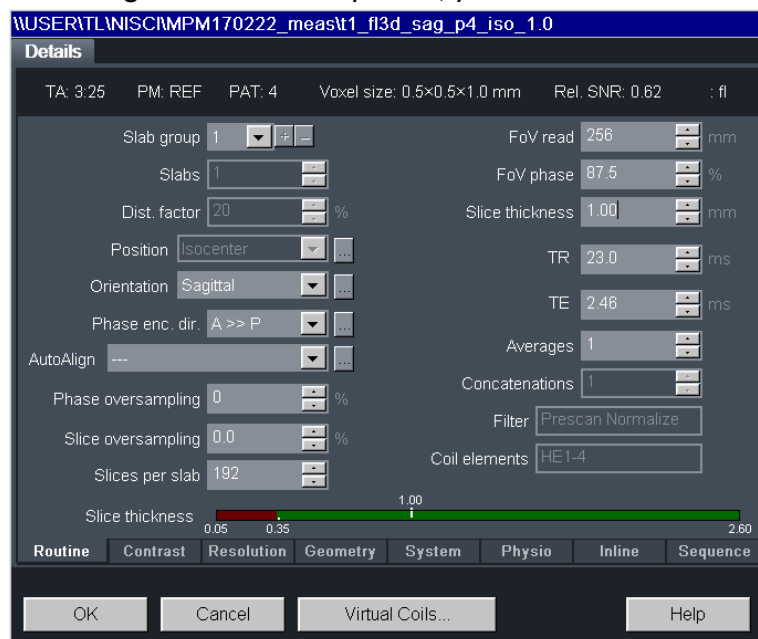


Within the right area perform right click and insert the copied sequence by clicking on "Paste".

5

4. Change Routine Settings

After double clicking the inserted sequence, you can access the settings.

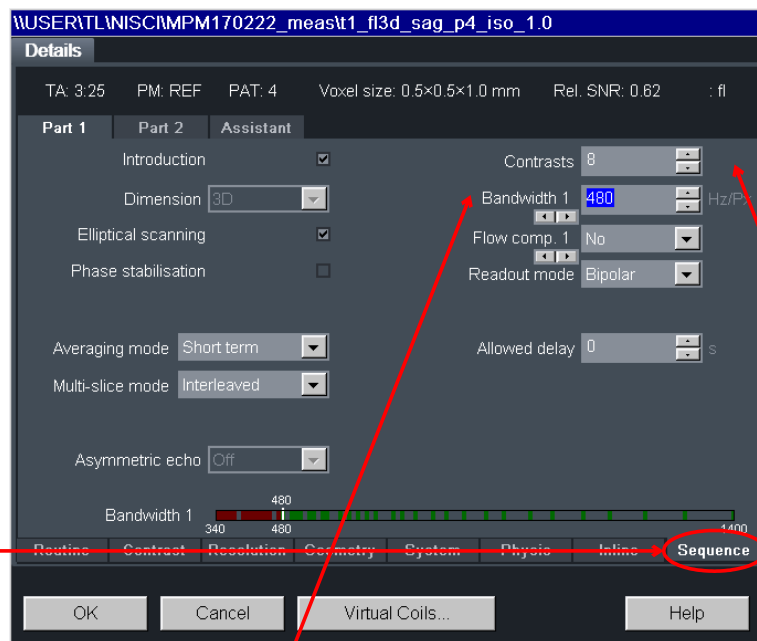


Change the routine settings as indicated.

6

5. Change Settings for the Sequence, Part 1

Select
"Sequence"
at the
bottom...



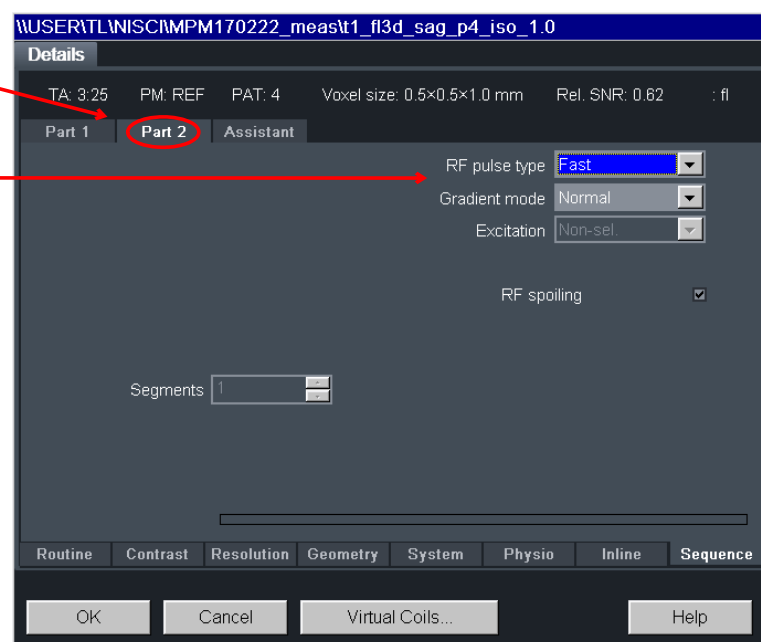
First of all change the bandwidth to 480 (Hz/Px) , afterwards the number of Contrasts to 6. Also the Allowed delay should be set to 0 (s).

6. Change Settings for the Sequence, Part 2

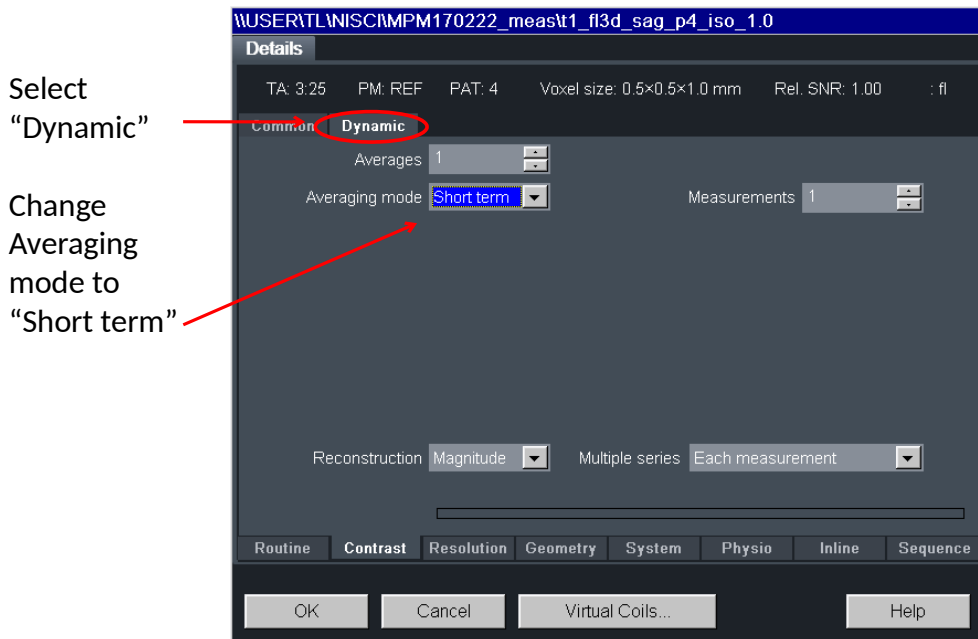
Select Part 2

Select "Fast"
as RF pulse type

Gradient mode:
"Normal"

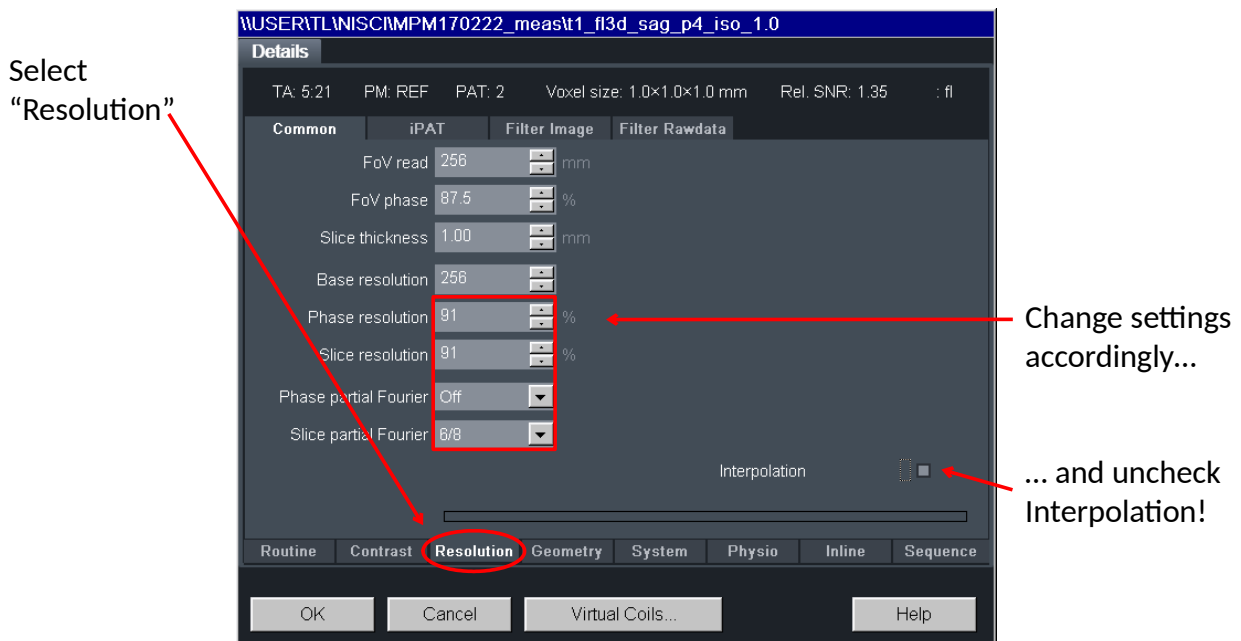


8. Contrast Settings, Dynamic



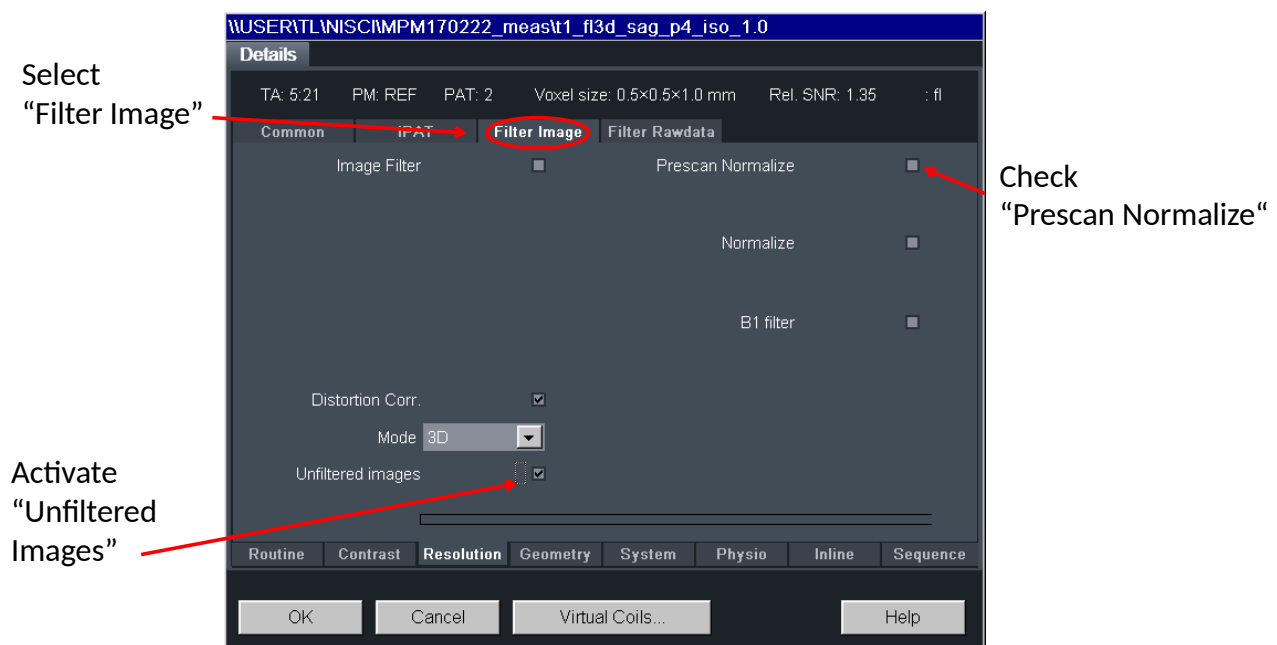
9

9. Resolution Settings, Common



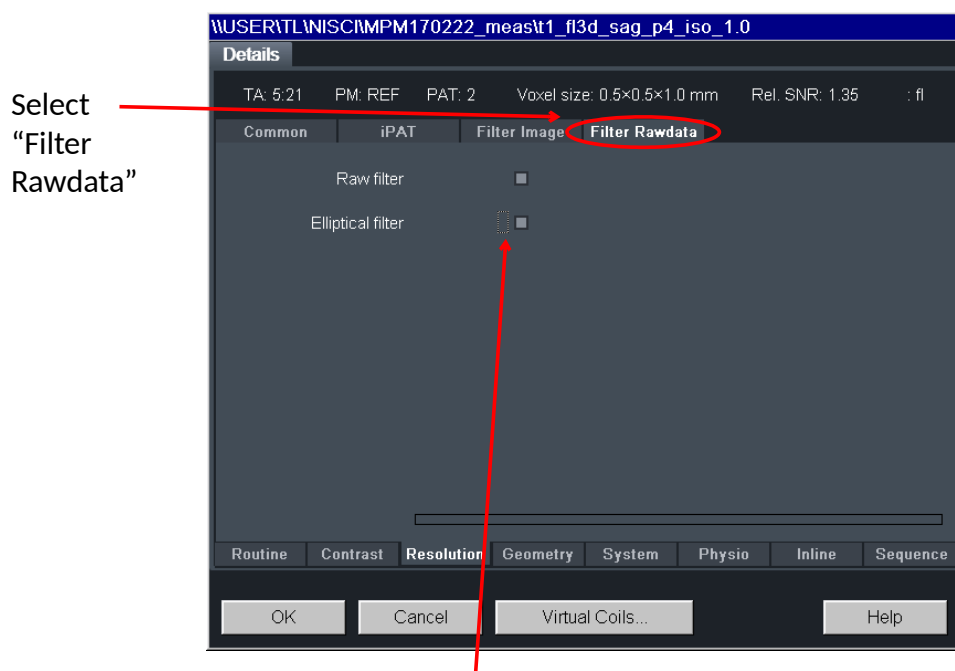
10

10. Resolution Settings, Filter Image



11

11. Resolution Settings, Filter Rawdata



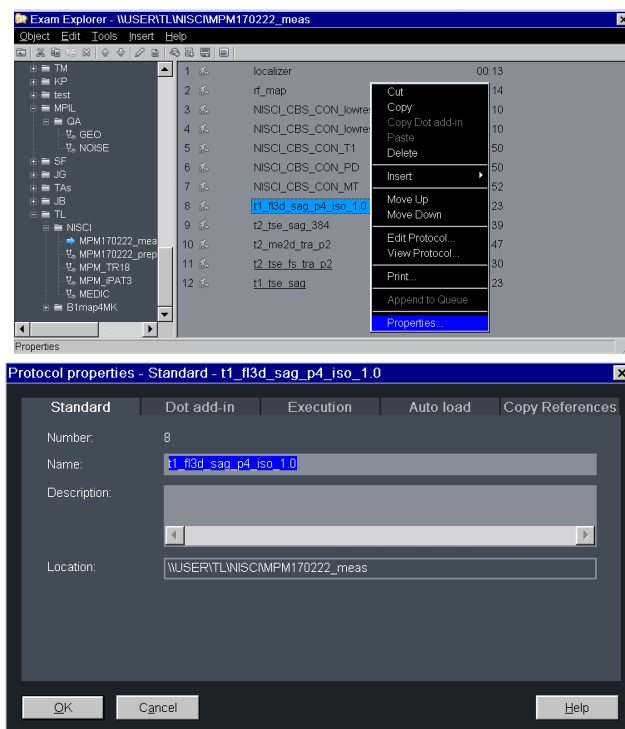
12

12. Change Shim and Coil Combination settings

For proper shimming set B0 shim mode to “Standard” in each sequence at the System card and also choose “Sum of Squares” as coil combine mode.

13

13. Close and Rename Sequence



After closing the settings window, right click at the sequence and select “Properties...”

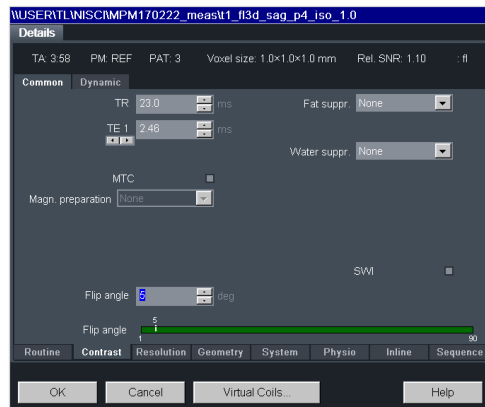
Here you can change the name to: NISCI_XXX_T1

replace XXX with your 3 letter code for your SCI center

14

14. Changes for PD

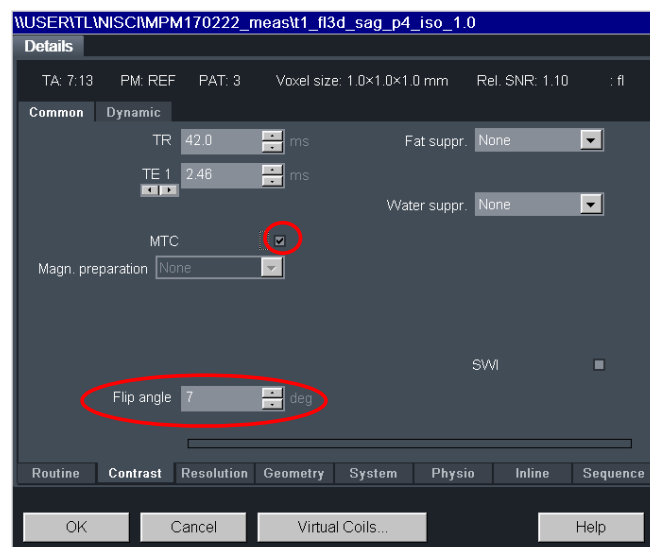
- Copy and paste the newly created protocol
- Afterwards change naming to PD and in the “Contrast” settings change the Flip angle to 4°



15

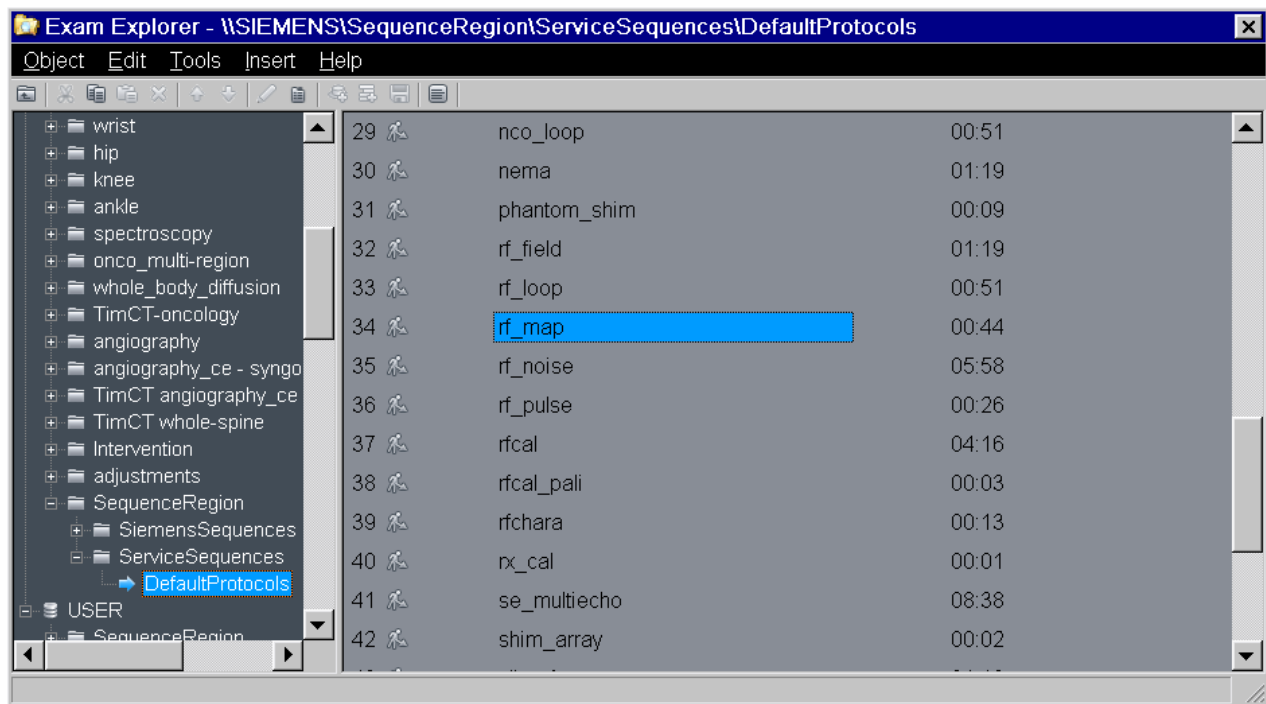
15. Changes for MT

As in the last step copy and paste the new sequence, change naming now to MT and in the “Contrast” settings change the Flip angle to 6 and activate MTC.



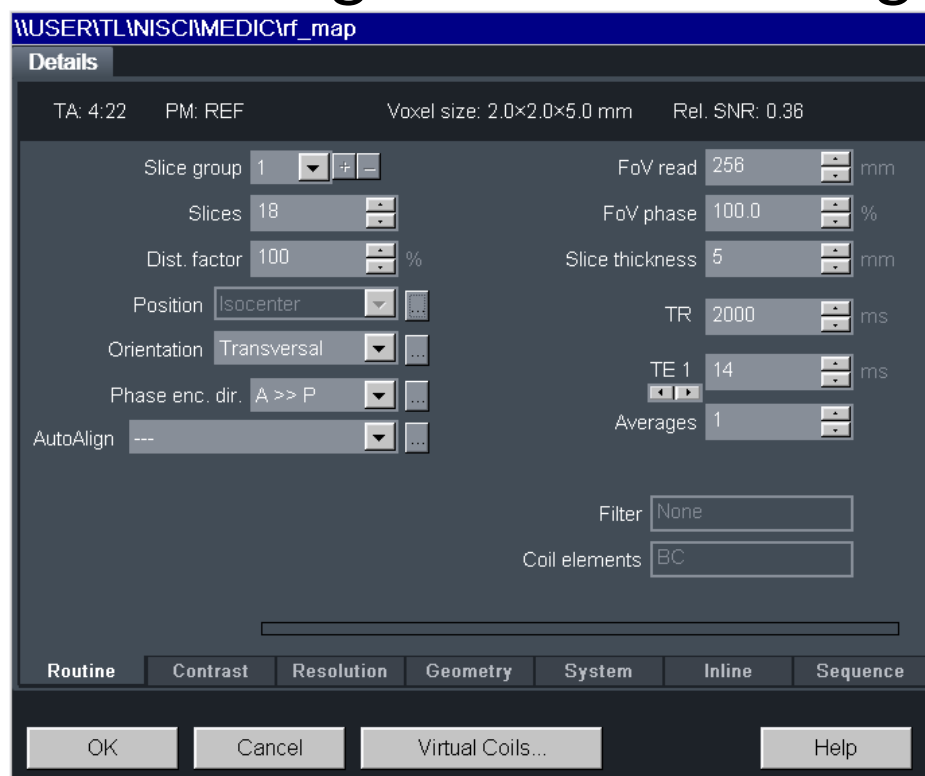
16

16. Finding the RF_map sequence

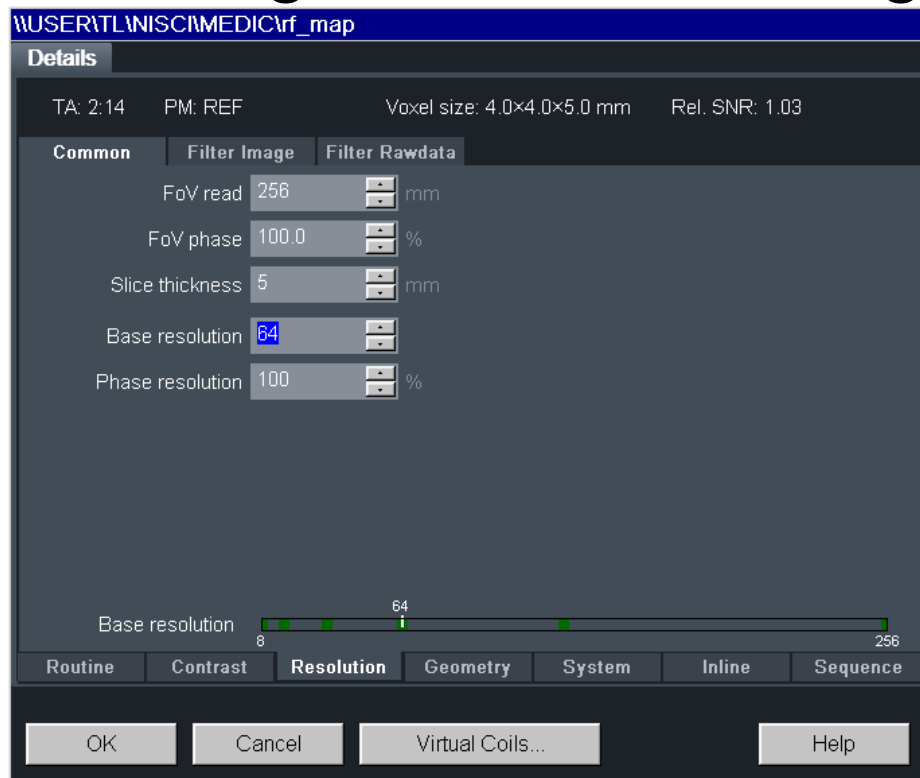


Copy and past the sequence for B1 field mapping as described in steps 2+3 for MPMs. 17

17. Change Routine Settings

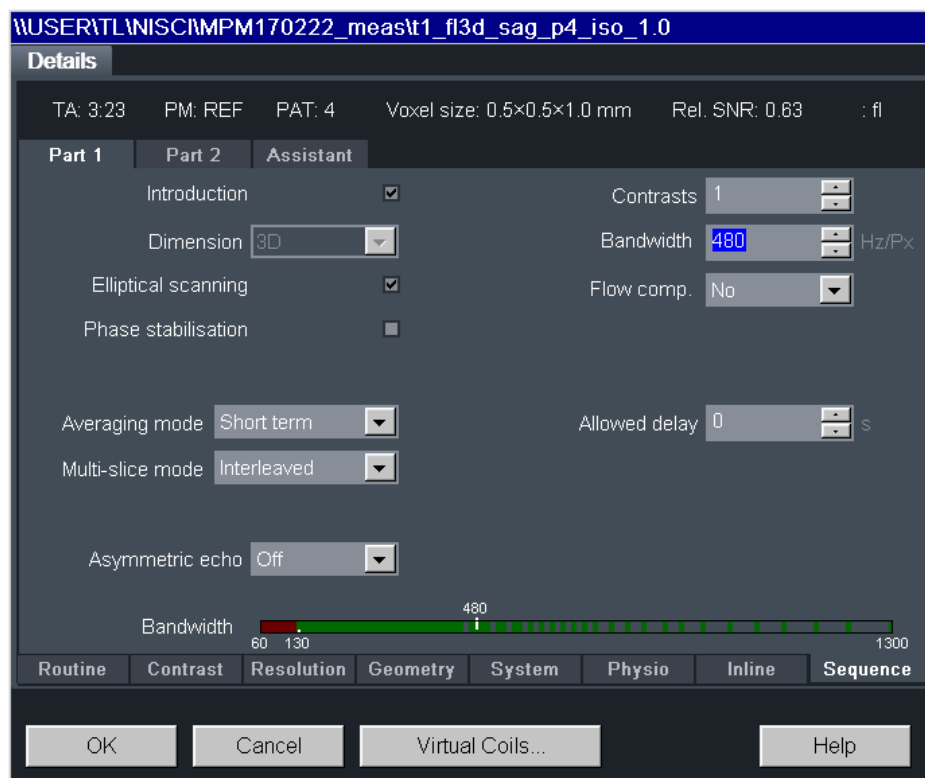


18. Change resolution settings



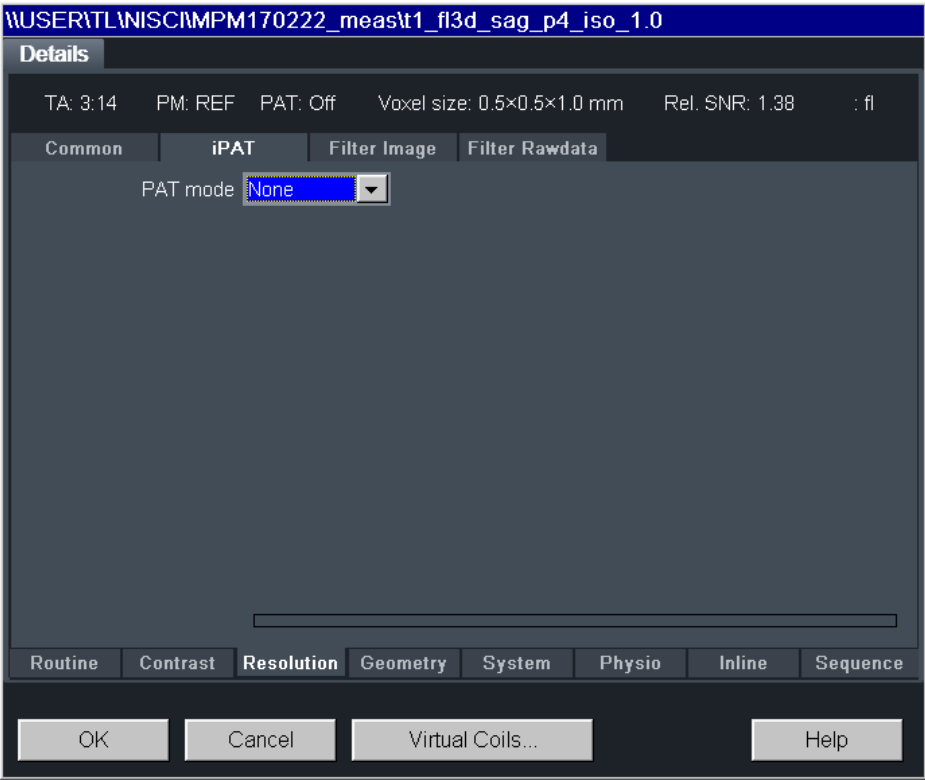
19

19. Setup of low resolution RF sensitivity mapping



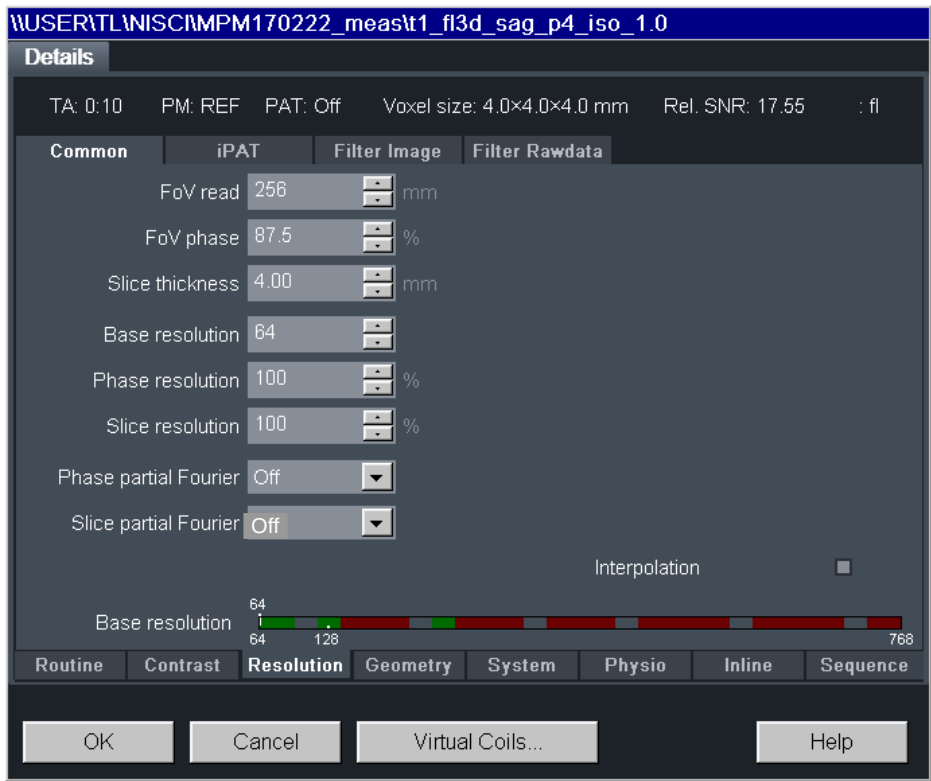
Copy a T1/PD-weighted sequence from the MPMs and reduce contrasts to 1.²⁰

deactivate iPAT



21

change resolution settings and deactivate partial Fourier!



22

change flip angle

\\USER\TL\NISC\MPM170222_meast1_fl3d_sag_p4_iso_1.0

Details

TA: 9.8 s PM: REF PAT: Off Voxel size: 4.0×4.0×4.0 mm Rel. SNR: 17.55 : fl

Common **Dynamic**

TR: 4.6 ms Fat suppr.: None

TE: 2.00 ms Water suppr.: None

MTC: ☐ Magn. preparation: None

SWI: ☐

Flip angle: 6 deg

Flip angle: 1 6 90

Routine **Contrast** **Resolution** **Geometry** **System** **Physio** **Inline** **Sequence**

OK Cancel Virtual Coils... Help

23

change number of slices, reduce TE & TR to 4.6 and 2 ms (or available minimum)

\\USER\TL\NISC\MPM170222_meast1_fl3d_sag_p4_iso_1.0

Details

TA: 0:10 PM: REF PAT: Off Voxel size: 4.0×4.0×4.0 mm Rel. SNR: 17.55 : fl

Slab group: 1 Slabs: 1 Dist. factor: 20 % Position: Isocenter Orientation: Sagittal Phase enc. dir.: A >> P AutoAlign: ---

FoV read: 256 mm FoV phase: 87.5 % Slice thickness: 4.00 mm

TR: 5.0 ms TE: 2.14 ms Averages: 1 Concatenations: 1 Filter: None Coil elements: HE1-4

Phase oversampling: 0 % Slice oversampling: 0.0 % Slices per slab: 44

Slices per slab: 16 44 120

Routine **Contrast** **Resolution** **Geometry** **System** **Physio** **Inline** **Sequence**

OK Cancel Virtual Coils... Help

24