

# Phantom QA Results: 32 CH

**Date:03/19/2018**

**Dartmouth Brain Imaging Center (DBIC)**

| Measurement   | Value | Comments   |
|---|-------|--|
| Signal-to-Noise Ratio (SNR)<br>(fig 2)              | 220.3 |  |
| Signal-to-Fluctuation-Noise ratio<br>(SFNR) (fig 2) | 172.8 | Low SFNR   |
| Radius of Decorrelation (RDC)<br>(fig 3)            | 15.4  |  |
| Drift (fig 1)                                       | 0.67  |  |
| Percent Fluctuation (fig 1)                         | 0.08  |  |
| Fourier analysis of the residuals<br>(fig 2)        | <5    | Low frequency peak is present                          |
| Ghost Mean Percentage<br>(fig 10)                   | 2.25% | Better than the recommended<br>level (3% < ) in ref 2: |

Table 1: Key measurements

result.xml [percent fluct (trend removed), drift, driftfit] = [0.08, 0.67, 0.4

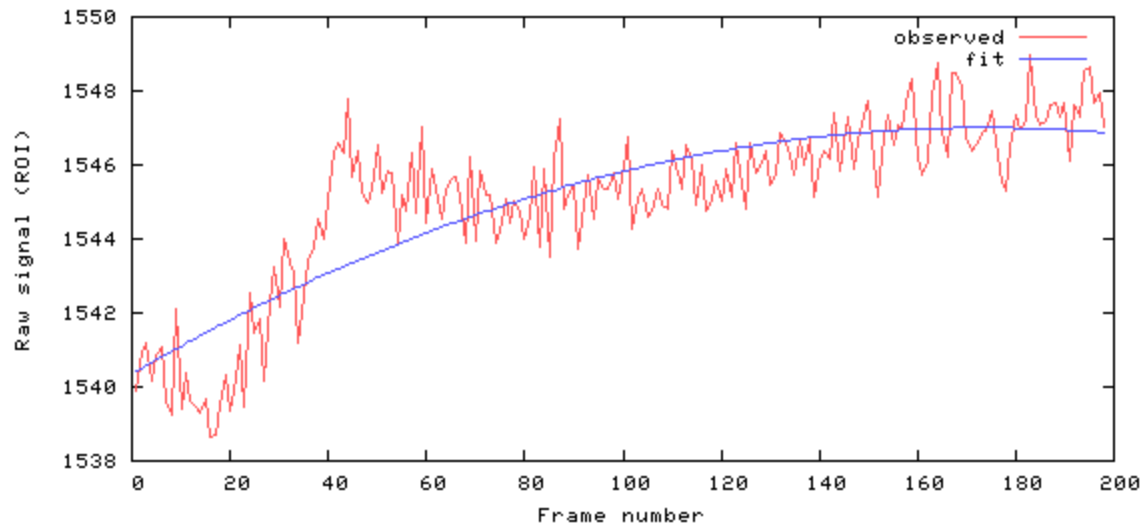


Figure 1

[mean, SNR, SFNR] = [1545.1 220.3 172.8]

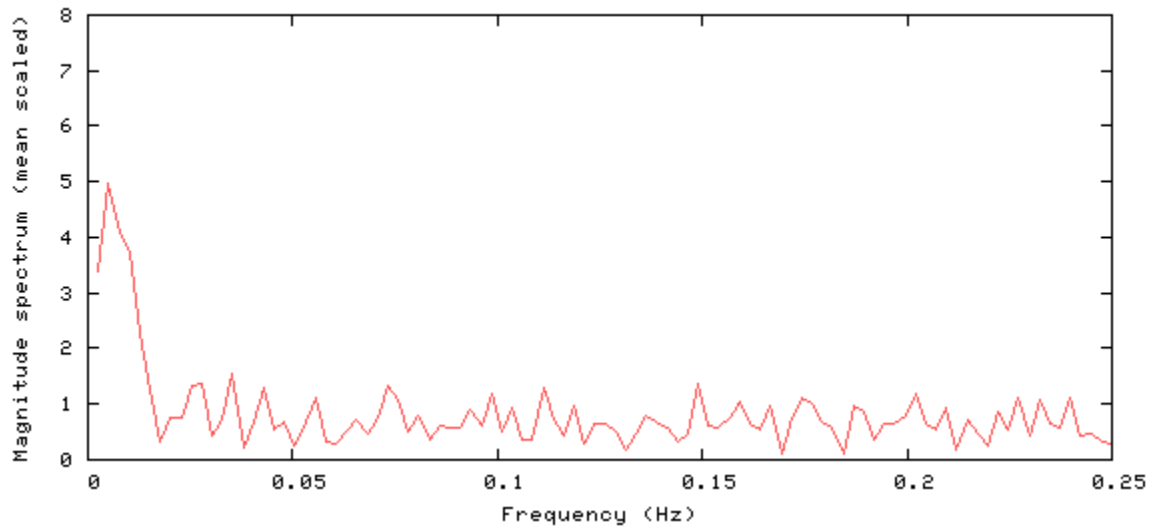


Figure 2

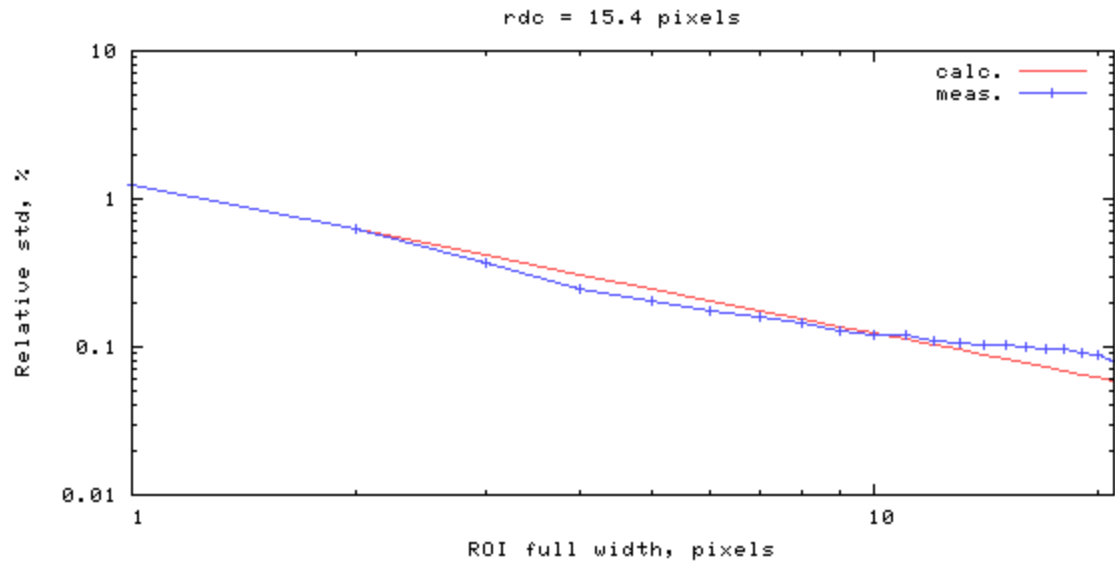


Figure 3

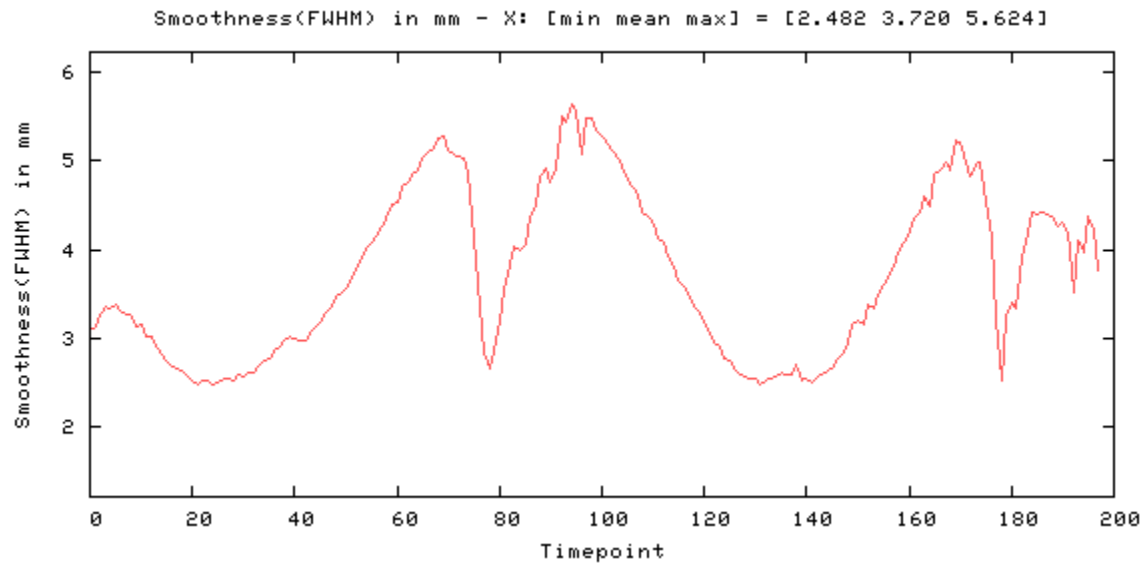


Figure 4

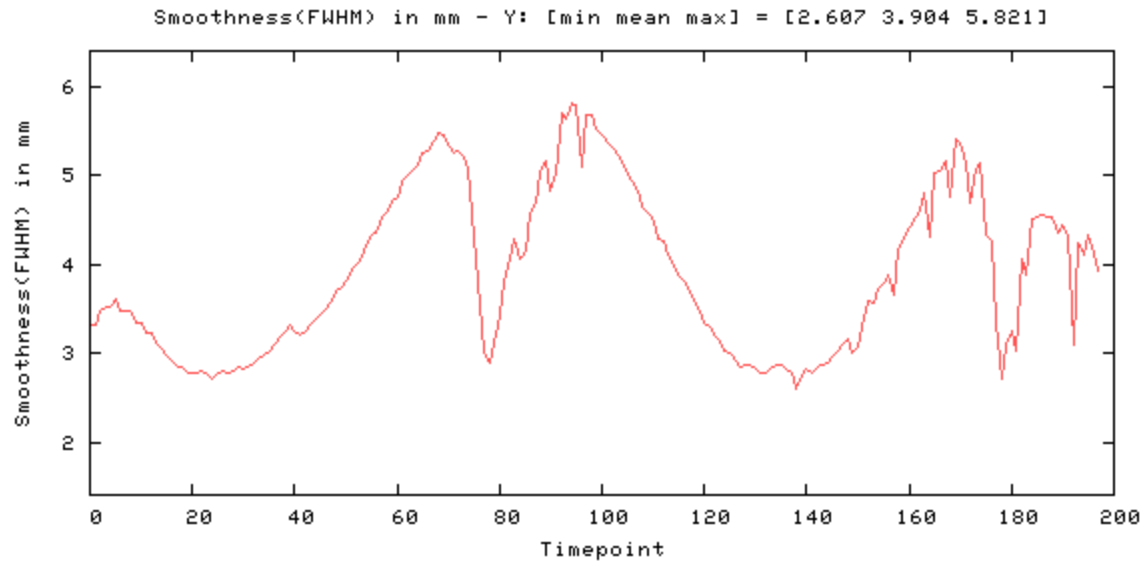


Figure 5

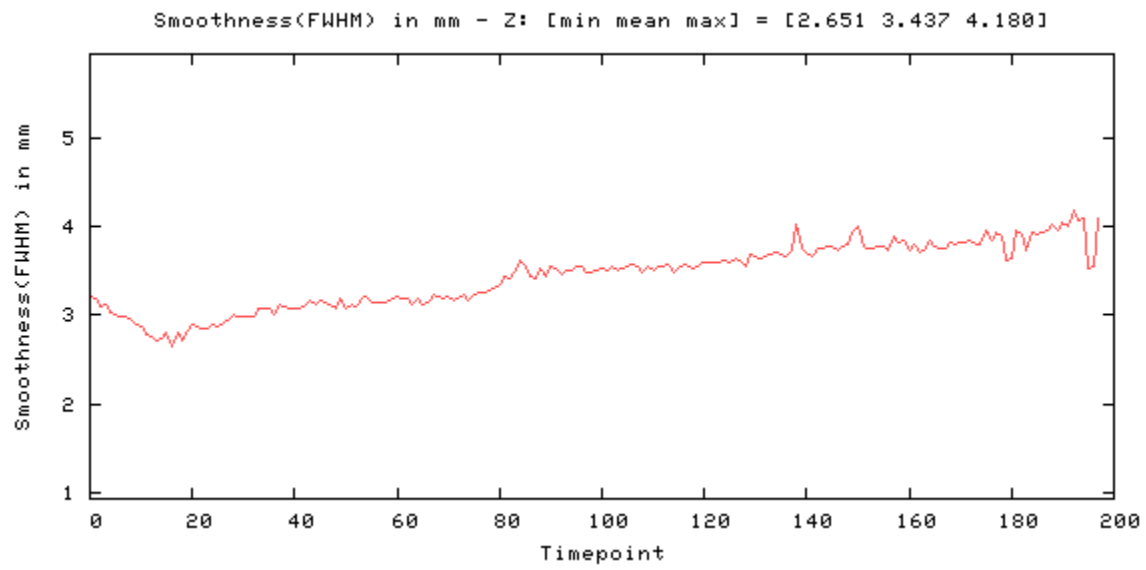


Figure 6

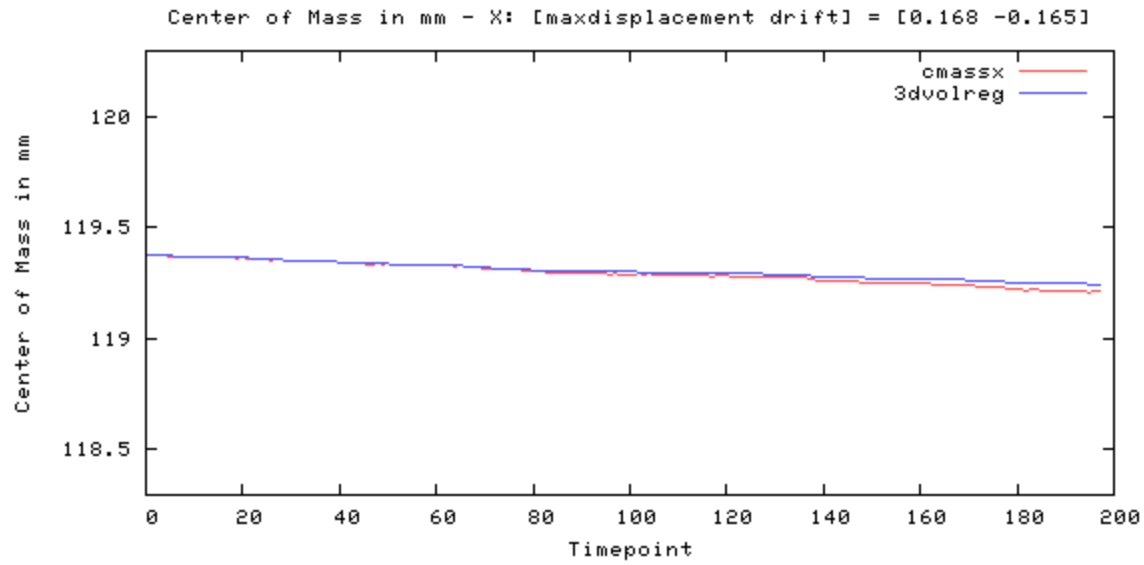


Figure 7

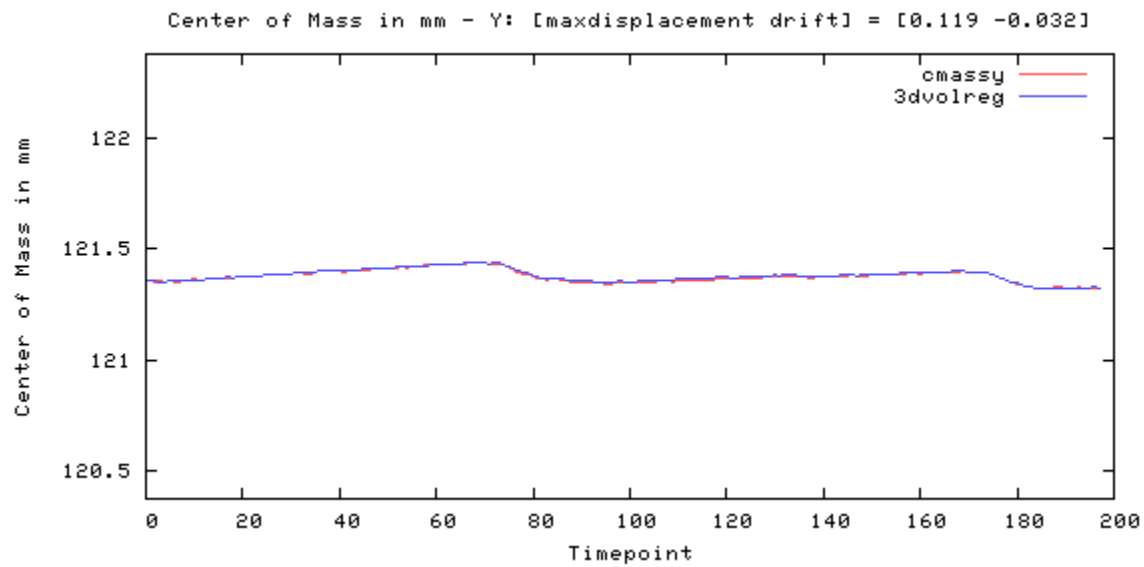


Figure 8

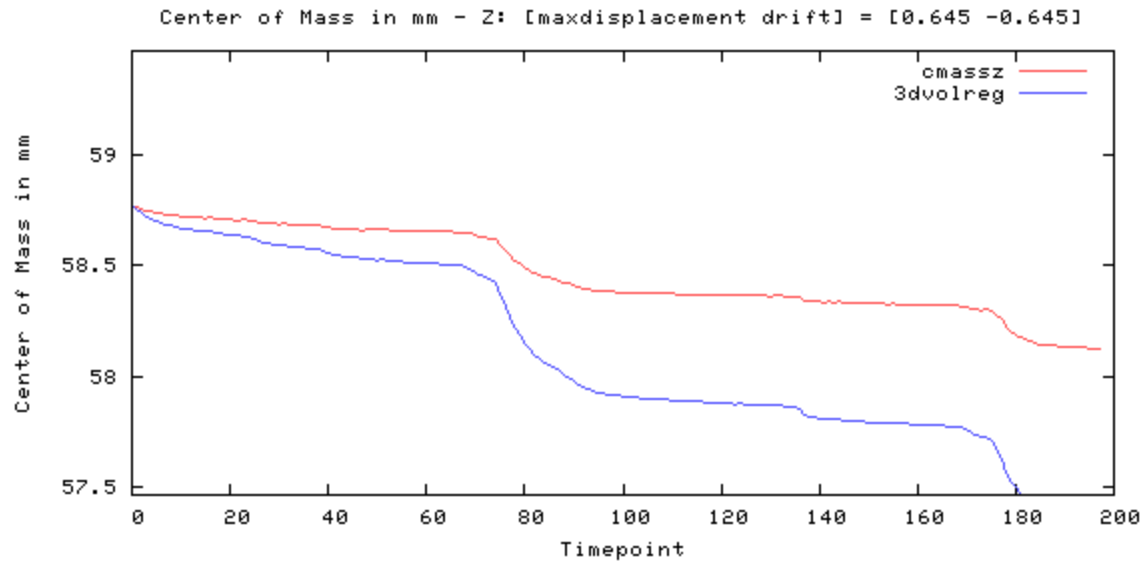


Figure 9

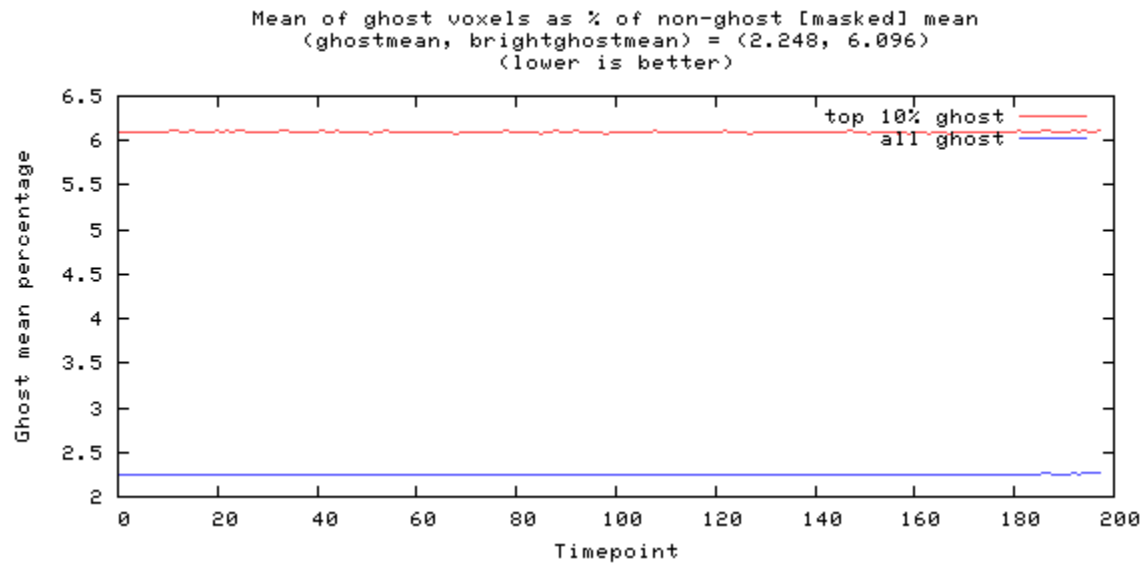


Figure 10

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## Odd-even difference image



image min: -424, image max: 341

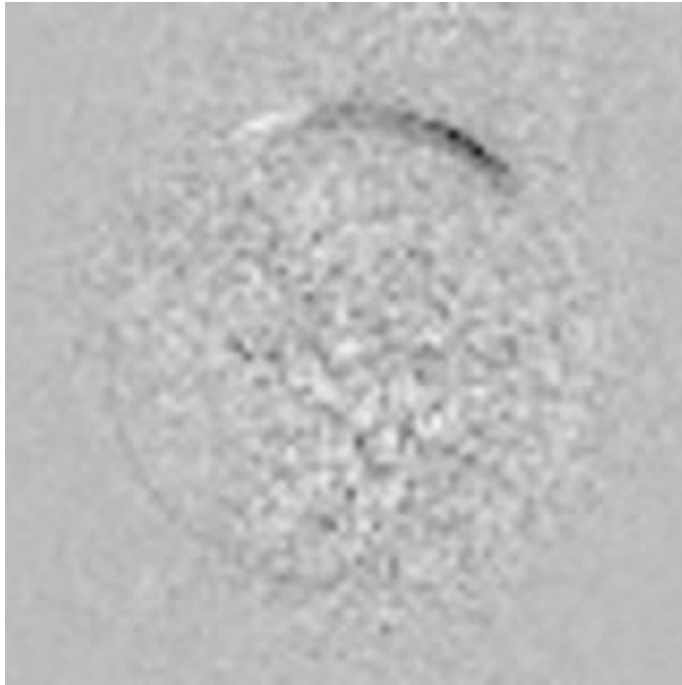


Figure 11

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## Mean image



image min: 0, image max: 2306.51

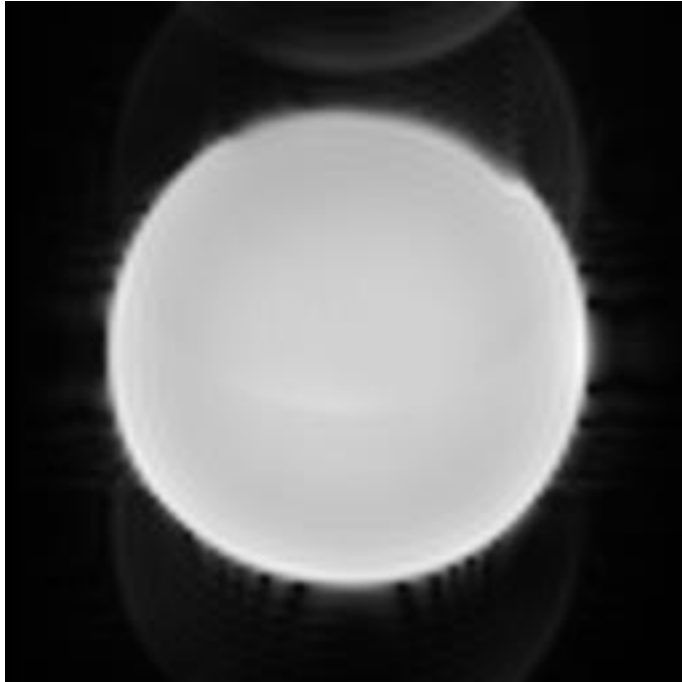


Figure 12



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## Standard Deviation image



image min: 0, image max: 71.996

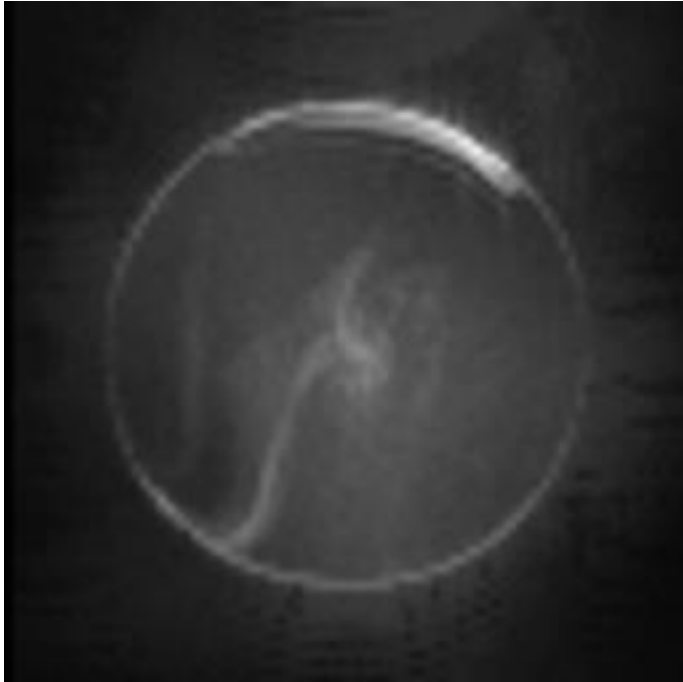


Figure 13

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## SFNR image



image min: 0, image max: 729.53

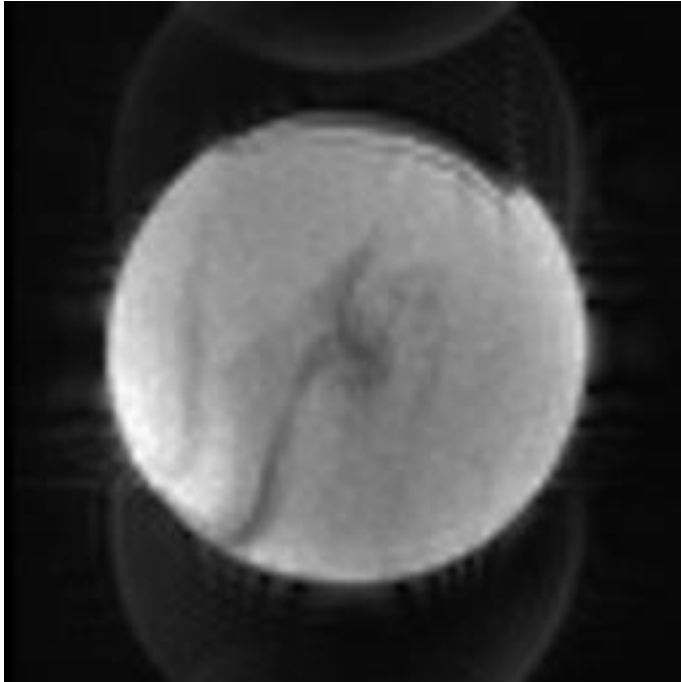


Figure 14

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## Acquisition parameters

|                        |   |
|------------------------|---|
| dimensions             | 80x80x30x200  |
| spacing                | 3mmx3mmx3.99mmx2000ms                                   |
| gap                    | 0mmx0mmx0.49mmx0ms                                      |
| scanner                | AWP66112  |
| psdname                | %SiemensSeq%\ep2d_bold                                  |
| examnumber             | 36  |
| studyid                | qa  |
| seriesnumber           | 5   |
| runnumber              | 1   |
| scanningsequence       | EP  |
| sequencevariant        | SK  |
| magneticfield          | 3   |
| description            | func-bold_task-rest_acq-p2                              |
| scandate               | 2018-03-19  |
| scantime               | 09:38:48  |
| tr                     | 2000  |
| te                     | 35.000000   |
| flipangle              | 90  |
| prescribedslicespacing | 3.99  |
| frequencydirection     | 1   |
| acquisitionmatrix      | 80 80   |
| bandwidth              | 185.2   |
| transmitcoilname       | Body  |
| institution            | Dartmouth College - PBS                                 |
| examdescription        | dbic^QA   |
| scanner                | AWP66112  |
| scannermanufacturer    | SIEMENS   |
| scannermodelname       | Prisma  |
| fieldofview            | 240 240   |
| psdname                | %SiemensSeq%\ep2d_bold                                  |
| protocolname           | func-bold_task-rest_acq-p2 (func-bold_task-rest_acq-p2) |

|                                |                               |
|--------------------------------|-------------------------------|
| institutionaddress             | Maynard 3,Hanover,NH,US,03755 |
| institutionaldepartment name   | Department                    |
| scanoptions                    | FS                            |
| mracquistiontype               | 2D                            |
| sequencename                   | *epfid2d1_80                  |
| angioflag                      | N                             |
| numaverages                    | 1                             |
| imagingfrequency               | 123.252472                    |
| imagednucleus                  | 1H                            |
| spacingbetweenslices           | 3.9900000666593               |
| numphaseencodingsteps          | 79                            |
| echotrainlength                | 39                            |
| percentsampling                | 100                           |
| percentphasefieldofview        | 100                           |
| scannerserialnumber            | 66112                         |
| softwareversions               | syngo MR E11                  |
| inplanephaseencoding direction | COL                           |
| variableflipangleflag          | N                             |
| sar                            | 0.05580720716061              |
| dBdt                           | 0                             |
| acquisitionnumber              | 1                             |
| instancenumber                 | 1                             |
| samplesperpixel                | 1                             |
| photometricinterpretation      | MONOCHROME2                   |
| rows                           | 480                           |
| columns                        | 480                           |
| bitsallocated                  | 16                            |
| bitsstored                     | 12                            |
| highbit                        | 11                            |
| pixelbandwidth                 | 2315                          |
| otherinfo                      |                               |

|            |  |
|------------|--|
| sliceorder | 2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,1,3,5,7,9,11,13,15,17,19,21,23,25,27,29 |
|------------|--|

References:

1. Friedman L, Glover GH. Report on a multicenter fMRI quality assurance protocol. J Magn Reson Imaging. 2006a; 23(6):827–839. [PubMed: 16649196]
2. Acceptance Testing and Quality Assurance Procedures for Magnetic Resonance Imaging Facilities, AAPM Report No. 100
3. [https://www.nitrc.org/projects/bxh\\_xcede\\_tools](https://www.nitrc.org/projects/bxh_xcede_tools)