

Flags in Load Varian

Usage:

```
load_varian input_filename output_filename [-options]
```

Options:

Reordering

- ms** Reorder data acquired in multislice.
- epi** Reorder data acquired using EPI, reversing alternate echoes.
- lpss n** Reorder data acquired with the slice position (pss) shifted every volume (looppps). The number of blocks that the slices are split into is specified by n. The number of slices divided by the number of blocks must be an integer. Must be used in conjunction with the -epi flag.
- fmap** Reorder data acquired using the field mapping sequence (spin-echo, asymmetric spin-echo pairs). Must be used in conjunction with the -ms flag.
- sear n** Reorder data from a multislice experiment (with seqcon='ncsnn') where a parameter has been arrayed. The number of steps in the arrayed parameter is specified by n. Must be used in conjunction with the -ms flag.

Processing

- ft2d** Perform a 2D Fourier Transform on a slice by slice basis through the data series.

- ft3d** Perform a 3D Fourier Transform on each volume of the data series.
- ftr** Fourier Transforms the rows only.
- bl** Correct the baseline offset.
- zero n** Zeropad each slice matrix to $n \times n$.
- zzero n** Zeropad in the z (slice) direction to n . If the data requires only 2D Fourier transformation then it is inverse Fourier transformed in the z direction prior to zeropadding and then transformed back.
- rot** Rotate each slice by 90 degrees.
- negrot** Rotate each slice by -90 degrees.
- revproc** Process the volumes in reverse order, but maintain the original ordering in the output. This is useful if the last volume in the series is a better estimate of those parameters taken from the first volume only (e.g. scaling, self-reference phase correction, phase rotation).
- revload** Process and output the volumes in reverse order.
- hks** Apply half-k-space (half-Fourier) processing. There are a number of other flags that can control the type of half-k-space processing options used, but these are intended for development and testing.
- hkspad** Process the data as half-k-space, but without the phasing or conjugation.
- nav n/m/p/mp** Signifies that the data has been acquired with navigator echoes. Follow -nav with n to remove the navigator echoes but do no processing with them. Specify m or p to use the navigator to correct magnitude or phase of the data respectively and mp to correct both magnitude and phase. Note that this is for EPI data only and is in development.
- shift n** Shift the data array by n pixels (teph correction). Note that n must be an integer.

Input format

- start n** Ignore the first n volumes.
- num n** Process n volumes only.
- avwin** Input file is a complex AVW file of time data.

- raw x y z v** Input file contains raw time data in the form of real-imaginary pairs of short integers (shorts). The matrix dimensions are specified in x,y,z and v.
- series** Process all images in a series. For example if the input filename is series_3.1 then files series_3.1.fid, series_3.2.fid, series_3.3.fid etc. will be processed.
- orig** Read the raw data from the file `input_filename.fid/fid.orig` instead of `input_filename.fid/fid`.
- ne n** Specifies the number of echoes in a multi-echo data set. This is only necessary if the number of echoes (ne) in procpars is not correct.

Output format

- 16** Output the data as 16-bit integers (shorts). The data will automatically be scaled such that the maximum (0.99 percentile) is 20000.
- mod** Output the modulus of the complex data.
- phs** Output the phase of the complex data.
- re** Output the real part of the complex data.
- im** Output the imaginary part of the complex data.
- resl** Reslice the output data to the axial plane.
- segx low num** Segment the output volume in the x direction starting from low, for num points.
- segy low num** Segment the output volume in the y direction starting from low, for num points.
- segz low num** Segment the output volume in the z direction starting from low, for num points.
- cp fn** Duplicates the output to this filename (fn).

EPI phase correction

- ref fn** The name (fn) of a reference scan to use in the phase correction. In the absence of either -buo or -hu flags then the reference scan is assumed to be a single volume EPI with no phase-encoding.

- buo** Phase correction is done according to the Buonocore (self reference) method. If no reference scan is supplied (the normal case) then the first volume of the series is used to correct all the data. If a reference scan file name is supplied (with the `-ref` option) then this is taken to be a single phase-encoded volume from which the phase correction will be calculated.
- buov** Apply the Buonocore correction (self reference) correction on a volume by volume basis.
- hu** Phase correction is done according to the Hu method. This requires the name of a phase-encoded reference scan (supplied with the `-ref` option) with the phase-encoding of opposite polarity to the main data.
- con** Constrains the phase correction to be a single linear correction of alternate lines in the slice.
- poly** Constrains the phase correction to be a single fifth order polynomial correction of alternate lines in the slice.
- ph0 n** Apply a zeroth order alternate line phase correction of n.
- ph1 n** Apply a first order alternate line phase correction of n.

Image post-processing

- scsl [fn]** Scale slices in a volume based on slice position and the scale values specified in a file `FSLDIR/tcl/{rfcoil}.scale` or in the specified filename (fn).
- scale n** Scale all the values in the output data by a factor of n.
- max n** Scale all the values in the output data so that the maximum (based on 0.99 percentile) is equal to n.
- kmb n** Mask the border of each slice in k-space by n pixels before Fourier Transform.
- imb n** Mask the border of each slice in the output image by n pixels.
- phrot n** Phase rotate volumes (in blocks of n) such that the phase of the first volume in the block is zero across the whole volume.
- smod n** Determine the sign of the phase of the data and output the data as signed modulus. The data series is treated in blocks of n volumes.

-phmap fn Apply a phase map to the output *volume* based on the values in a complex AVW file (fn).

Other

-help View the help message.

-overx n Force the x dimension in the header file to be n.

-overy n Force the y dimension in the header file to be n.

-overz n Force the z dimension in the header file to be n.

-overv n Force the v dimension in the header file to be n. Note that these values affect the output header file only and not how the data is processed.

-opss Extract the slice position array (pss) to a file named `output_filename.pss`.