Description of the subversion DAVE-DAVE4VM archive

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*** code requires a WORKING minimal SolarSoft distribution ***
*** for FITS (flexible image transport system) access ***
*** www.lmsal.com/solarsoft/ ***

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MAIN directories:

SHOOTOUT - contains test programs and examples for DAVE and DAVE4VM using
the shootut data from Welsch [2007]
DAVE - contains dave.pro dave4vm.pro and other useful tools for analyzing magnetograms

MUD - MUDPACK elliptic solver
http://www.cisl.ucar.edu/css/software/mudpack/

elliptic2d.f has been upgraded to use George Fisher's "Simple Data Format"

sdf-0.74 - contains George Fisher's "Simple Data Format" release 0.74
This must be compiled and installed to compile elliptic2d

It is not necessary to compile SDF if you perform all the tests with the /no_elliptic2d flag. However it is still necessary to have the SDF idl libraries accessible (see make_all.pro below)

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Extra IDL code

SHOOTOUT/aspect.pro http://www.dfanning.com/ (this is part of the LASCO distribution in SolarSoft but not part of a minimal SolarSoft distribution)
SHOOTOUT/plotimage.pro http://cow.physics.wisc.edu/~craigm/idl/down/plotimage.pro

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Main data archive

SHOOTOUT/make_all.pro (should be turnkey) performs all the calculations and makes all the plots and tables for the paper:
Schuck,"Tracking Vector Magnetograms with the Magnetic Induction

SHOOTOUT/SCHUCK contains data, figures and tables corresponding to the windows and code in Schuck [2008] on the mask $|B| = \sqrt{B_x^2 + B_y^2 + B_z^2} > 370\,\text{G}$. make

SHOOTOUT/WELSCH contains data, figures and tables corresponding to the windows and code in Schuck [2008] but on the mask $|B_z| > 370\,\text{G}$ used in Welsch [2007].

SHOOTOUT/old_shootout contains the shootout data from Welsch [2007] and undocumented code used for that paper

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Some relevant references


Schuck, "Local Correlation Tracking and the Magnetic Induction Equation"

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STEPS FOR INSTALLATION ON A LINUX SYSTEM:

[1] A minimal SolarSoft distribution must be installed mainly for FITS
access for example my minimal SolarSoft Distribution reports: 'SSW setup will include: <gen>'

[2] (OPTIONAL) install the pazo math fonts


(see documentation in SHOOTOUT/make_all.pro). This is only REALLY necessary if you want the special characters I used in some of the plots to look correct (bold-faced vartheta, etc).

http://www.lmsal.com/solarsoft/index_old.html

[3] uncompress archive in your home directory or you may have to edit paths

    tar -xvzf DAVE-DAVE4VM_1.0.tgz

[4] A Fresh compile of elliptic2d (which might not be necessary)
    requires Absoft 32bit Fortran 95 9.0 r2. The present executable runs under SUSE 10/11 0Linux on both 64 and 32 bit machines i've tried

    cd DAVE-DAVE4VM/MUD
    make clean
    make elliptic2d

[5] The DAVE directory must be added for IDL_PATH

    something like: (bash)
    export IDL_PATH=$HOME/DAVE-DAVE4VM/DAVE
or (tcsh)
setenv IDL_PATH $HOME/DAVE-DAVE4VM/DAVE

[6] run the code in DAVE-DAVE4VM/SHOOTOUT. Running all of the tests
and making all of the figures takes some time so you may want to
get some coffee.

cd $HOME/DAVE-DAVE4VM/SHOOTOUT
sswidl nox
make_all,/clean
make_all

or if you don't have a working version of elliptic2D

make_all,/no_elliptic2d

will use the saved vector potential I computed with elliptic2d

finally

make_all,/skip_optimize

will skip the window optimization calculations and load in the
ones I computed for figure#1 (runs significantly faster).

Below are a pair of tcsh scripts I used for running everything
from my top-level directory, but you make want to edit
SHOOTOUT/batch_job.pro before using them.
#!/bin/tcsh
\rm -Rf MUD
\rm -Rf DAVE-DAVE4VM
setenv TOP `pwd`
tar -xvzf DAVE-DAVE4VM_1.0.tgz
cd $TOP/DAVE-DAVE4VM
test-suite.sh

#!/bin/tcsh
#
setenv DAVE_ROOT `pwd`
#
if ( ! ($?IDL_PATH) ) then
  setenv IDL_PATH .
endif
#
# This section will make mudpack with ABSOFT fortran
#cd MUD
#make clean
#make
#
# make george fisher's sdf
cd $DAVE_ROOT/SDF
make clean
make
make
cd $DAVE_ROOT/SHOOTOUT
setenv IDL_PATH $DAVE_ROOT/DAVE\:$DAVE_ROOT/SDF/idl\:$IDL_PATH

# set up batch job
setenv IDL_STARTUP $DAVE_ROOT/SHOOTOUT/batch_job.pro

# start up solarsoft
source $SSW/gen/setup/setup.ssw
sswidl nox

#### end of tcsh script