

LEOPACK



cicm2ocdisplay

Conducting Inner Core and Mantle 2 Outer Core
DISPLAY

Steven J. Gibbons, Oslo

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Conducting Inner Core and Mantle 2 Outer Core DISPLAY

With the existing LEOPACK graphics programs, it is not possible to plot a constant radius diagram of a magnetic field function on the same plot as a velocity field when the magnetic field and velocity/temperature functions are stored in different files. For example, you could not plot contours of B_r on the same plot of arrows of horizontal flow. `cism2ocdisplay` simply makes a temporary file containing velocity, temperature and magnetic field in the same vector files.

It is possible to add an inhomogeneous temperature function. This is done by setting `SCAL` in the input file to the strength of the temperature function applied. If `SCAL` is set to zero, the program does not attempt to read such inhomogeneous temperature files.

The stand-alone source code version of the program is compiled by typing

```
make sacism2ocdisplay
```

Once the executable is created, begin execution by typing

```
cism2ocdisplay < inputfile
```

The inputs file must have the following format.

```
*
* Input file for cism2ocdisplay
*
junkfiles                : Stem for output filenames
full_dynamo.intsv        : Name of velocity/temperature harms file
full_dynamo.vecsv        : Name of velocity/temperature vector file
full_dynamo.xarrv        : Name of velocity/temperature xarr file
full_dynamo.intsm        : Name of magnetic field harms file
full_dynamo.vecsm        : Name of magnetic field vector file
full_dynamo.xarrm        : Name of magnetic field xarr file
-0.1                     : SCAL (Strength of boundary heating)
y22_boundary.ints        : Name of inhomog. temperature harms file
y22_boundary.vecs        : Name of inhomog. temperature vector file
y22_boundary.xarr        : Name of inhomog. temperature xarr file
```

Any line in the input file beginning with an asterisk, `*`, is ignored by the program and can thus be used to enter comments and notes.

The arguments are as follows

- **filename stem:** First characters in output files to be generated by current run. Running `cicm2ocdisplay` with the above file will generate the files `junkfiles.ints`, `junkfiles.vecs` and `junkfiles.xarr`.
- **ints file velocity:** name of already existing indices file describing initial velocity and temperature functions.
- **vecs file velocity:** name of already existing vector file describing initial velocity and temperature functions. Must contain the same number of radial functions as indicated in the `.intsv` file.
- **xarr file velocity:** name of already existing radial spacings file describing initial velocity and temperature functions. Must contain the same number of radial grid nodes as indicated in the `.vecsv` file.
- **ints file magnetic field:** name of already existing indices file describing initial magnetic field functions.
- **vecs file magnetic field:** name of already existing vector file describing initial magnetic field. Must contain the same number of radial functions as indicated in the `.intsm` file.
- **xarr file magnetic field:** name of already existing radial spacings file describing initial magnetic field. Must contain the same number of radial grid nodes as indicated in the `.vecsm` file. See note above on compatibility of `vecsv` and `vecsm` files.
- **SCAL:** Multiplier for the inhomogeneous velocity term.
- **ints file inhomogeneous temperature:** name of already existing indices file describing the imposed temperature functions. **NOT READ IF SCAL IS SET TO ZERO.**
- **vecs file inhomogeneous temperature:** name of already existing vector file describing the imposed temperature functions. Must contain the same number of radial functions as indicated in the `.intsv` file. **NOT READ IF SCAL IS SET TO ZERO.**
- **xarr file inhomogeneous temperature:** name of already existing radial spacings file describing the imposed temperature functions. Must contain the same number of radial grid nodes as indicated in the `.vecsv` file. **NOT READ IF SCAL IS SET TO ZERO.**

Note that the output files have the 'no boundary conditions' option set and so they cannot be used for further calculations. They are only useful for display. As this program is very basic, I will not give any examples or further information.

1.1 Subprograms required for cicm2ocdisplay

SUBS subroutines

xarrc2.f xarrrd.f bihfrd.f svfrd.f xarrwt.f hmfwt.f
svfwt.f svrint.f fopen.f fclose.f gfdcf.f fnamer.f
matop.f

SUBS integer function

indfun.f

BLAS integer function

idamax.f

BLAS subroutines

dgemv.f dgemm.f dtrsm.f dswap.f dger.f dscal.f
dtrmm.f dtrmv.f

LAPACK subroutines

xerbla.f dgetrf.f dgetri.f dgetf2.f dlaswp.f dtrtri.f
dtrti2.f

LAPACK integer function

ilaenv.f

LAPACK logical function

lsame.f