

# **Technical Aspects of the TASK Code**

**A. Fukuyama**

Department of Nuclear Engineering, Kyoto University

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# Necessary Packages of TASK

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- **Distributed from [bpsl.nucleng.kyoto-u.ac.jp](http://bpsl.nucleng.kyoto-u.ac.jp)**
  - **GSAF**: Graphic library
  - **BPSD**: Data exchange interface library
  - **TASK**: TASK code
- **Included packages** — imported from NTCC
  - **NCLASS**: Neoclassical transport model      W.A. Houlberg (ORNL)
  - **GLF23**: Turbulent transport model      J.E. Kinsey (Lehigh U) et al.
  - **IFS/PPPL**: Turbulent transport model      A.J. Redd (Lehigh U) et al.
  - **CYTRAN**: Cyclotron radiation      W.A. Houlberg (ORNL)
  - **NTCC**: National Transport Code Collaboration — <http://w3.pppl.gov/ntcc/>
- **Optional packages**
  - **Lapack**: Linear algebra library — <http://www.netlib.org/>
  - **MPI**: Parallel processing library — e.g. <http://www-unix.mcs.anl.gov/mpi/mpich/>
  - **MDSplus**: Scientific data base library — <http://www.mdsplus.org/>

# Download of TASK

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- **From CVS server with user account:** upload is allowed

```
export CVS_RSH=ssh
export CVSR00T=p-grp.nucleng.kyoto-u.ac.jp:/home/fukuyama/cvs
cvs co bpsd
cvs co task
cvs co gsaf
```

- **From CVS server with password:** latest version available

```
export CVS_RSH=ssh
export CVSR00T=:pserver:anonymous@p-grp.nucleng.kyoto-u.ac.jp:/home/fukuyama/cvs
cvs login
password: XXXXXXXX
cvs co bpsd
cvs co task
cvs co gsaf
```

- **From WEB server**

```
http://bpsl.nucleng.kyoto-u.ac.jp/task/
gsafnnn.tar.gz bpsdnnn.tar.gz tasknnn.tar.gz
```

# Compile of TASK

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- **Graphic Library: gsaf**

```
cd gsaf/src
cp ../arch/XXXXXXXX/Makefile.arch .
make
(sudo) make install
cd ../..
```

- **Data exchange interface library: bpsd**

```
cd task
cp make.header.org make.header
```

Edit make.header and remove comment char “#”

```
cd lib
make
cd ../../bpsd
make
cd ..
```

- **TASK itself:**

```
cd task/tot
make libs
make
```

# Useful CVS Commands

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- **Update of the file:**  
`cv update -Pd`
- **Comparison with the version most recently downloaded:**  
`cv diff [filename]`
- **Comparison with the latest version:**  
`cv diff -D now [filename]`
- **Comparison with the version in the past:**  
`cv diff -D 2009-09-01 [filename]`
- **Change history of the file:**  
`cv log [filename]`
- **Upload of the file:**  
`cv ci -m'comment' [filename]`

# Typical File Name of TASK

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- **XXcomm.f90**: Definition of global variables, allocation of arrays
- **XXmain.f90**: Main program for standalone use, read XXparm file
- **XXmenu.f90**: Command input
- **XXinit.f90**: Default values, input, and display of input parameters
- **XXprep.f90**: Initialization of run, initial profile
- **XXexec.f90**: Execution of run
- **XXgout.f90**: Graphic output
- **XXfout.f90**: Text file output
- **XXsave.f90**: Binary file output
- **XXload.f90**: Binary file input

# Typical Input Command

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- **After the start of the program, it displays a menu of one character commands and wait line input.**
- When input line includes **=**, interpreted as a namelist input (e.g., **rr=6.5j**)
- **R**: Initialize profiles and execute
- **C**: Continue run
- **P**: Namelist input of input parameters
- **V**: Display of input parameters
- **S**: Save results into a file
- **L**: Load results from a file
- **Q**: End of the program
- When the first character is not an alphabet, interpreted as a requested input (this behavior depends on the components)



# Input Parameters

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- **List of input parameters and default values**
  - Defined in a subroutine `XXinit` in a file `XXinit.f90`
  - Some of universal input parameters are defined in `plinit` in `pl/plinit.f90`
- **Order of input parameter setting**
  - Default setting at the subroutine `XXinit` in `XXinit.f90`
  - Read a namelist file `XXparm` at the beginning of the program
  - Setting by the input line

# Graphic commands

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- **At the beginning of the program**
  - **Setting of resolution** (0: metafile output only, no graphics)
  - **commands**
    - **C**: continue
    - **F**: setting metafile name, start saving
- **At the end of one page drawing**
  - **commands**
    - **C**: continue
    - **F**: setting metafile name, start saving
    - **S**: start saving and save the page
    - **Y**: save page and continue
    - **N**: continue without saving
    - **D**: dump page as a bitmap file “gsdump”
    - **B**: switch on/off bell sound
    - **Q**: quit program after confirmation

# Graphic Utilities

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- **Utility program**

- **gsview**: View metafile
- **gsprint**: Print metafile on a postscript printer
- **gstoeps**: Convert metafile to eps files of each page
- **gstops**: Convert metafile to a postscript file of all pages
- **gstotgif**: Convert metafile to a tgif file for graphi editor tgif
- **gstotsvg**: Convert metafile to a svg file for web browser

- **Options**

- **-a**: output all pages, otherwise interactive mode
- **-s ps**: output from page ps
- **-e pe**: output until page pe
- **-p np**: output contiguous np pages on a sheet
- **-b**: output without title
- **-r**: rotate page
- **-z**: gray output