The Center for Astrophysical Thermonuclear Flashes

fidlr3.0 and xflash3

Flash Tutorial
June 22, 2009
Dr. Lynn B. Reid

xflash3 Outline

❑ IDL Based

❑ How to use fidlr3.0/xflash3?

❑ Built-in features

   ❑ 2d plotting

   ❑ 1d plotting

❑ Going further

   ❑ programming

   ❑ use ViSit

xflash3 is IDL based

❑ **Written in IDL data analysis language**

  ❑ Commercial product – so expensive they won't tell you how much on the website

  ❑ Does have a reasonable user community

❑ **IDL features**

  ❑ Very similar to pvwave, similar to matlab, easy syntax, flexible

  ❑ Can be command-line driven or by sophisticated scripts

  ❑ Has lots of built-in file readers e.g. HDF5, netCDF

❑ **IDL disadvantages**

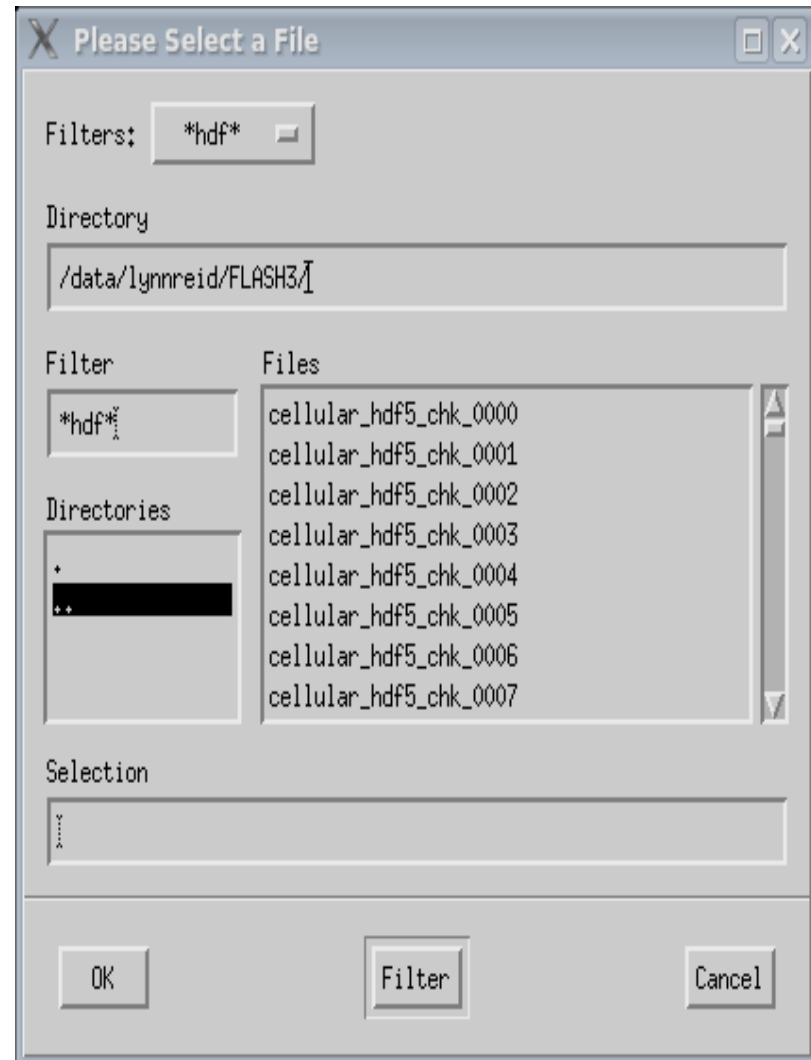 ❑ Graphical User Interface widget capabilities are dire

Getting started

❑ Found in tools/fidlr3.0 directory

   ❑ Beware of name changes!

   ❑ Flash2.5 had various names fidlr2, fidlr3, xflash

❑ Prepare shell environment

     ❑ setenv IDL_DIR "/usr/local/rsi/idl_6.3/"

     ❑ setenv XFLASH3_DIR "/data/lynnreid/FLASH3/tools/fidlr3.0"

     ❑ setenv IDL_PATH "/data/lynnreid/bin/idl/:${XFLASH3_DIR}:${IDL_DIR}:${IDL_DIR}lib"

❑ Start up IDL and xflash3

   ❑ Prompt> idl start_linux

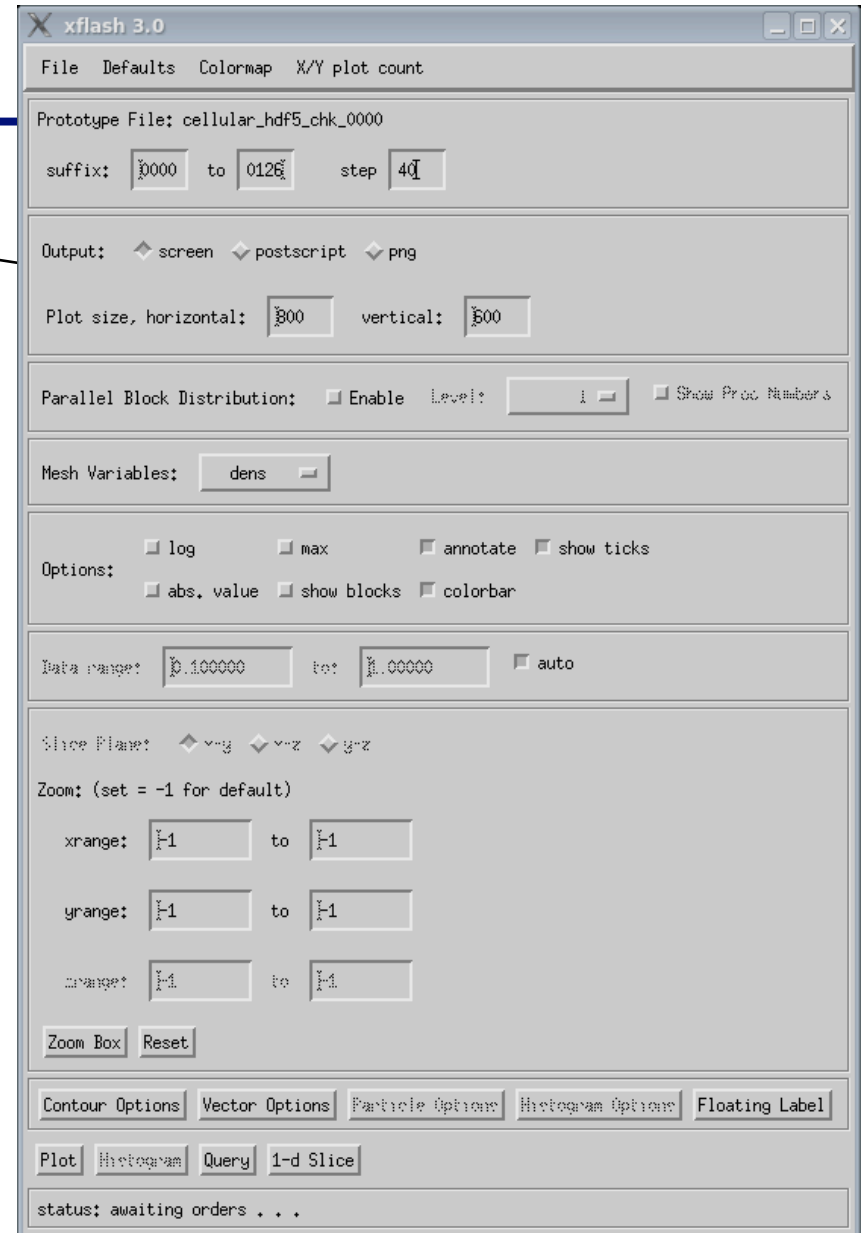   ❑ IDL>xflash3

Using xflash3: opening files

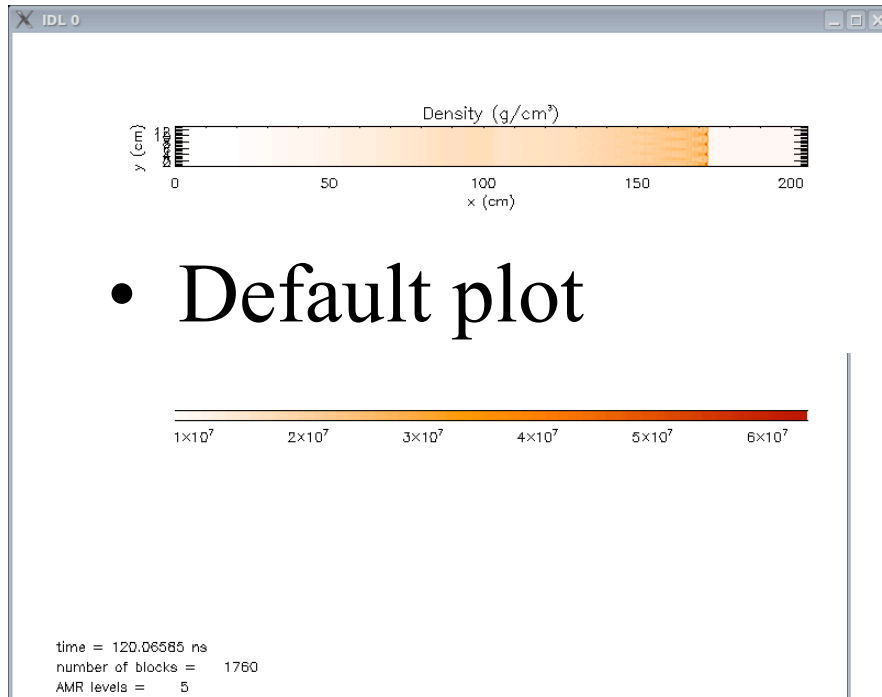- ❑ Filters help limit the number of confusing files
- ❑ hdf5/netcdf
- ❑ plt/chk

Main Window

- ❏ Multiple plots per page
- ❏ File ranges
- ❏ Generate hardcopy
- ❏ Select variable
- ❏ Useful for 3d
  - ❏ ViSit is recommended!
- ❏ Zoom box very helpful
- ❏ Extract 1D data
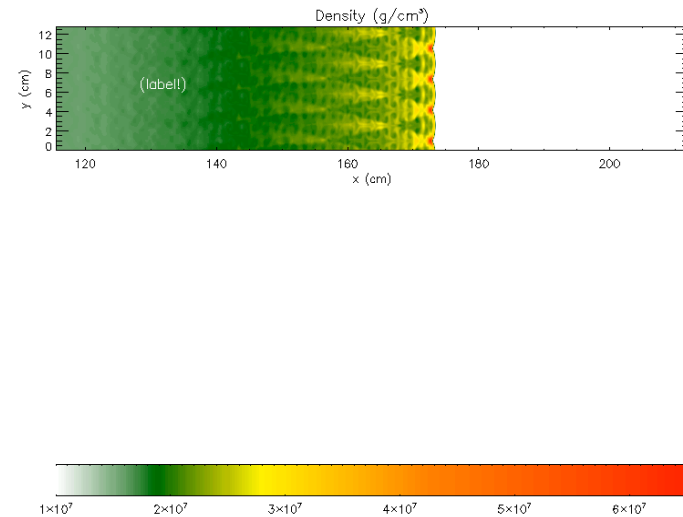- ❏ Add features poorly
- ❏ This makes it go!

xflash 3.0

File   Defaults   Colormap   X/Y plot count

Prototype File: cellular_hdf5_chk_0000

suffix: 0000   to   0126   step   40

Output: ◆ screen ◇ postscript ◇ png

Plot size, horizontal: 800   vertical: 600

Parallel Block Distribution: ☐ Enable   Level: 1   ☐ Show Proc Numbers

Mesh Variables: dens

Options: ☐ log   ☐ max   ☐ annotate ☐ show ticks
           ☐ abs. value ☐ show blocks ☐ colorbar

Data range: 0.100000   to: 1.00000   ☐ auto

Slice Plane: ◆ x-y ◇ x-z ◇ y-z

Zoom: (set = -1 for default)

    xrange: -1   to   -1

    yrange: -1   to   -1

    zrange: -1   to   -1

Zoom Box   Reset

Contour Options Vector Options Particle Options Histogram Options Floating Label

Plot   Histogram   Query   1-d Slice

status: awaiting orders . . .

- # Default plot

Use Zoom Box and resize

Using xflash3: 1D & query

❑ Can extract 1d slices from 2d

❑ In theory can also do 2d from 3d
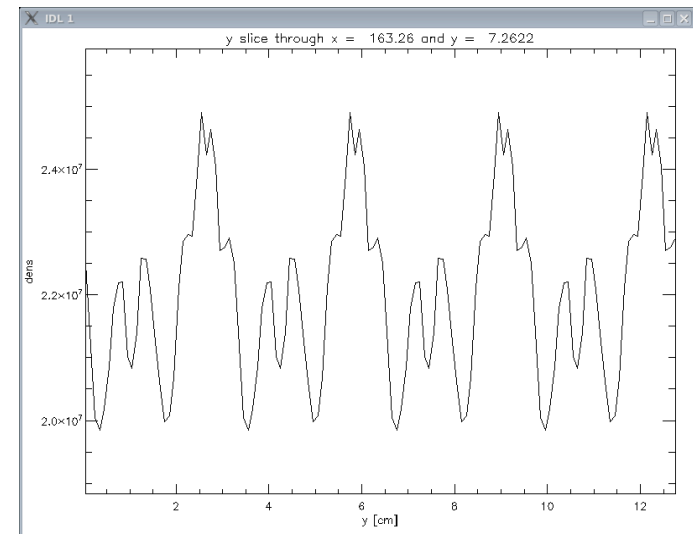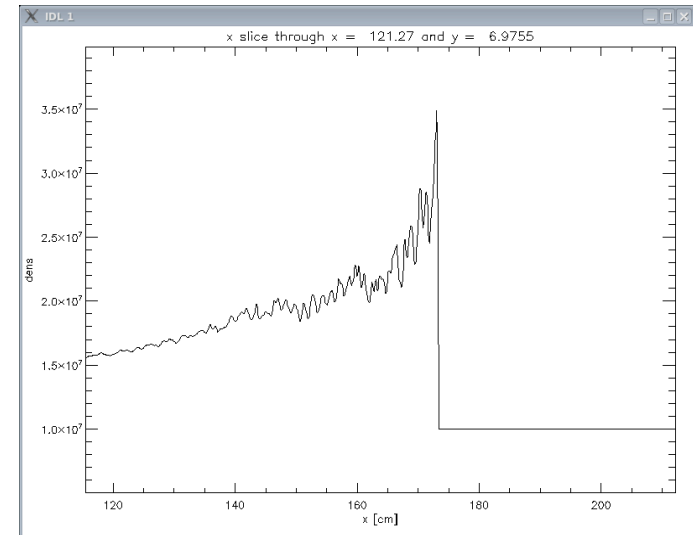
❑ Query function is useful for seeing all data at once

IDL Hints

❑ Other routines found in fidlr3.0 directory
  ❑ Not supported
  ❑ May not be compatible with new FLASH3 file format

❑ Sources of help
  ❑ **idlman** or **idlhelp**: hard to find and navigate but comprehensive
  ❑ **idldemo** might show you new tricks
  ❑ Google groups comp.lang.idl-pvwave
  ❑ Helpful websites: http://www.dfanning.com

❑ Serious programming: development environments
  ❑ **idlde** – vaguely useful
  ❑ **IDL Workbench**
    ❑ Integrated with popular Eclipse DE

❑ Use ViSit!
  ❑ See next presentation