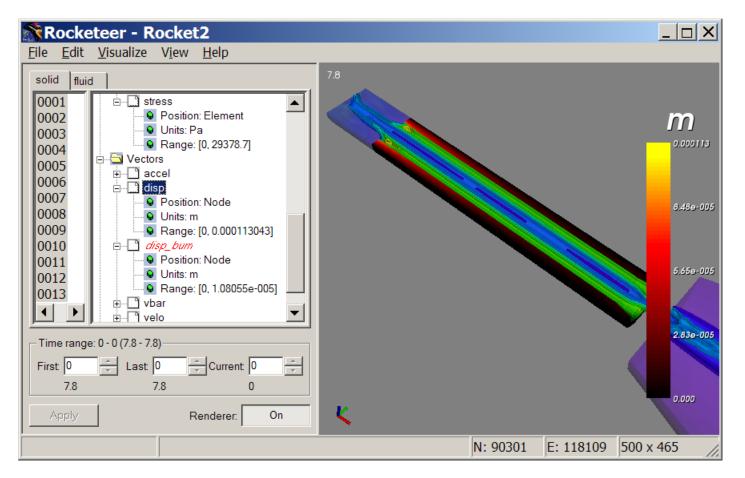
# Section 14 Using Rocketeer

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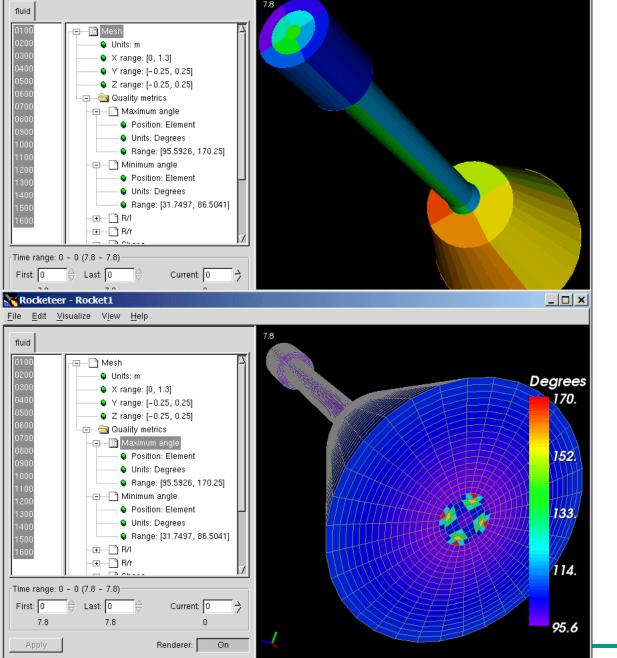


#### Visualization with Rocketeer

- Prerequsites on Linux
  - libstdc++.so.5 (compat rpm's)
  - libGLU.so.1 (rpm)







N: 81126

E: 76608

500 × 500

Rocketeer - Rocket1

File Edit Visualize View

#### Rocketeer

All data sets

\_ 🗆 ×

- Times, Blocks
  - Coordinates/ranges
  - Nodes/elements
  - Variables/ranges
    - Scalars
    - Vectors
    - Tensors
- Mesh
  - Blocks by color
- Quality metrics
  - Min/Max angle
  - Size, Skewness, etc.
- Surface plots



#### Rocketeer - Rocket1 Edit Visualize View Help ifluid\_b ifluid\_nb 0100 ⊕... Mesh ⊕ Scalars 0200 m/s 🖶 🔁 Vectors 0300 ± □ rhovf 0400 - Vf 0500 Position: Element 0600 Units: m/s 0700 Range: [0.411796, 2356.44] l0800 1.50e+00. 10900 1000 1100 1200 1.00e+003 1300 Time range: 0 - 0 (7.8 - 7.8) Last: 0 First 0 Current 0 7.8 7.8 Rocketeer - Rocket1 Edit Visualize View Help ifluid\_b ifluid\_nb 0100 alars 0200 S **XCoordinates** 0300 **YCoordinates** 0400 **ZCoordinates** 0500 0600 0700 Position: Element 10800 Units: s 8.55e-00) 10900 Range: [4.18536e-007, 1.83452e-005] 1000 pconn pf 1100 rand 1200 7.09e-00 rhoEf 1300 Time range: 0 - 0 (7.8 - 7.8) 5.64e-00 First 0 Last: 0 Current: 0 7.8 7.8 On Renderer: N: 81270 E: 76720 500 x 500

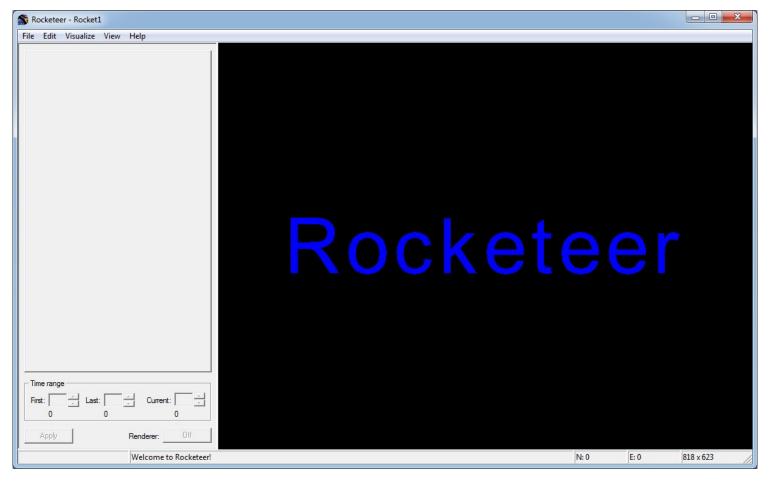
#### Rocketeer

- Glyphs
  - Particles
  - Vector fields
- Isosurfaces
- 3-D mesh plots
- Opacity controls
  - Constant
  - Value-dependent
- Thresholds
- Animation
  - Output series
  - Moving camera
- Stand-alone, client/server, and batch versions



# **Using Rocketeer**

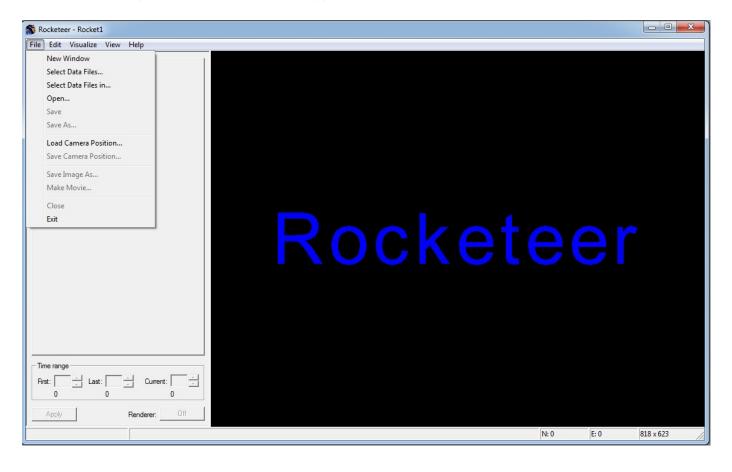
#### Open Rocketeer on Windows by double-clicking icon





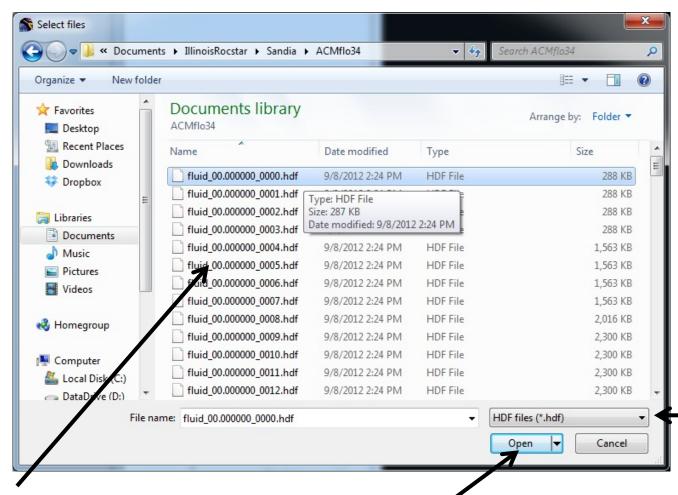
#### **Select Data to Display**

**Choose File->Select Data Files...** 





#### **Data Selection Dialog**



**Change** to **HDF** 

Shift-click or Ctrl-click to select multiple files

Select all the fluid\_00.0000\* files and click Open



#### **Data Display**

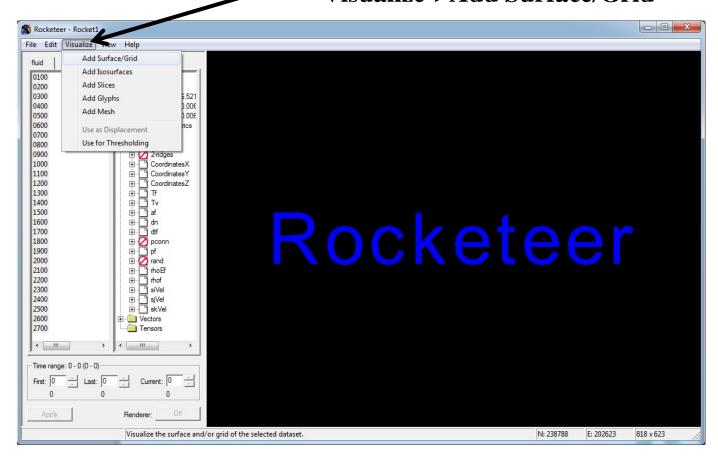
**Variables** Once Partitions are selected, click on Mesh Rocketeer - Rocket1 2800 2900 Partitions 3000 X range: [-6.521 3100 Y range: [-0.006 3200 ☑ Z range: [-0.006 Quality metrics 0700 Scalars 🛨 🕢 1-ridges 0900 ± 2-ridges 1000 CoordinatesX 1100 CoordinatesY 1200 Coordinates Z 1300 1400 1500 1600 1700 ] dtf 1800 ⊕ opconn 1900 pf 2000 nand [ nhoEf 2100 2200 sjVel 2400 skVel 2600 Vectors 2700 Tensors N: 238788 E: 202623

Click on 0100, Cltl-click on 3400 to select all partitions; click Apply button



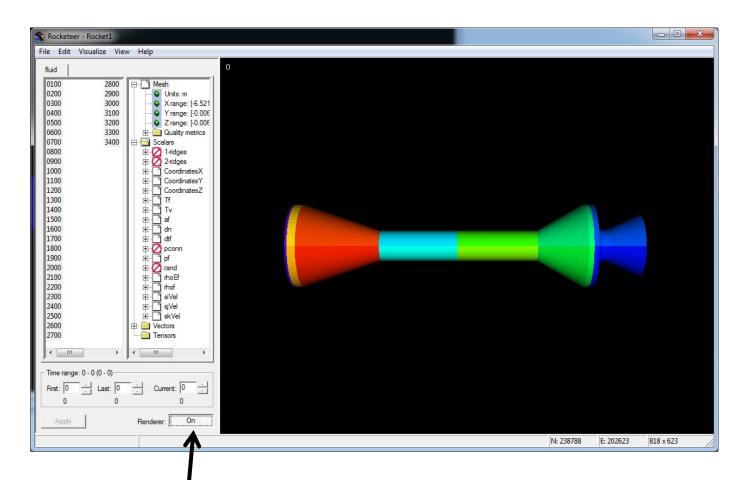
# Selecting Variable to Visualize

With Mesh variable selected, choose Visualize->Add Surface/Grid





# **Activating Display**



Click on Renderer button (toggle from off to on)



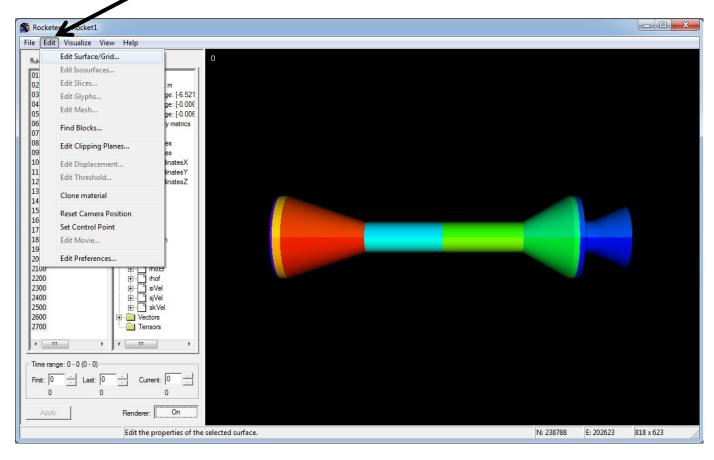
#### Moving the Image With the Mouse

- Left button free rotate
- Ctrl-Left Button Rotate in plane of screen
- Right button hold/move up: larger image
- Right button hold/move down: smaller image
- Center button: translate in plane of screen
- Note: There is no "return to default" command



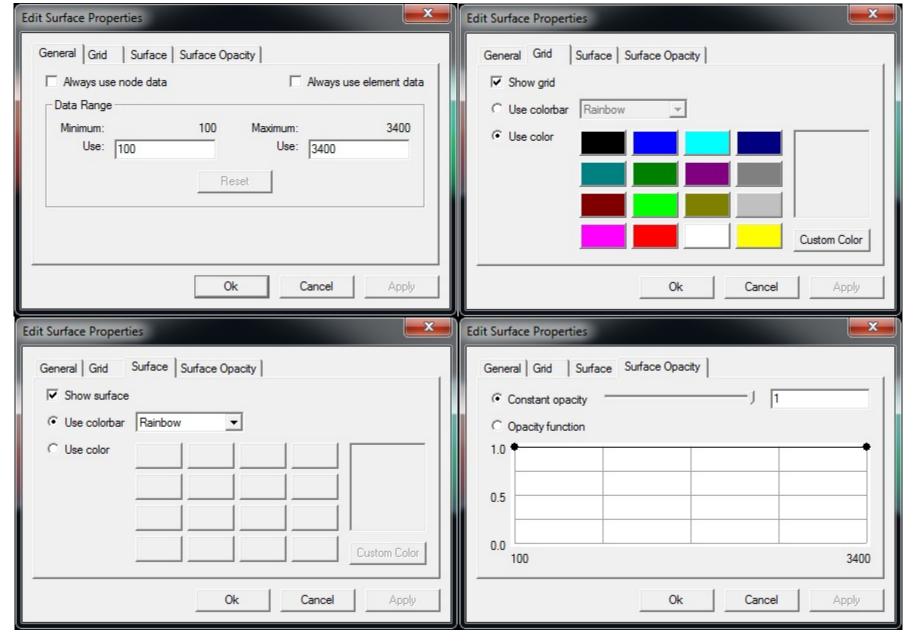
# **Change How Mesh Displays**

**Choose Edit->Edit Surface/Grid** 



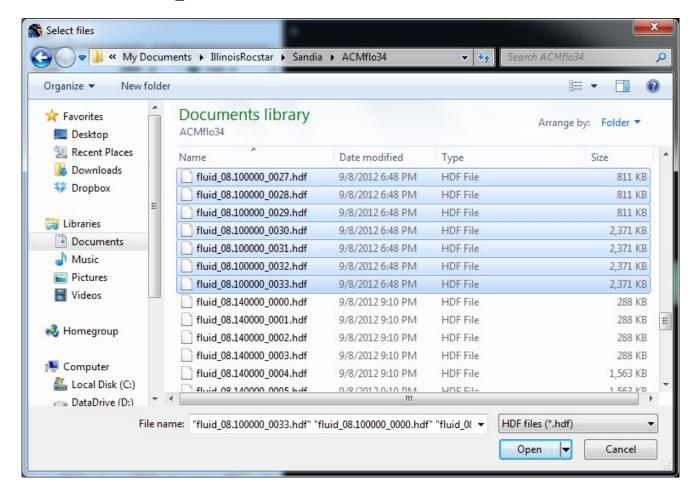


# Edit Surface/Grid Dialog - 4 tabs



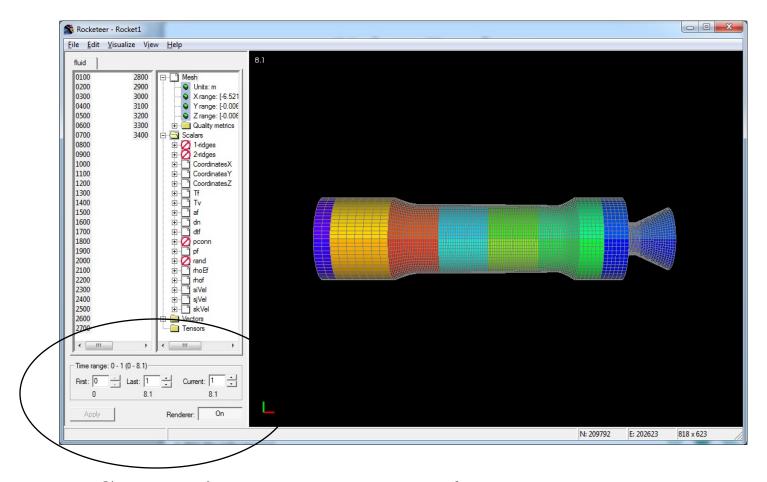
#### Add a New Timestep

File->Select Data Files... again. Choose all 34 blocks of another timestep (Select first file, shift-click on last)





#### **Displaying Different Times**



Shows time range. Use up/down arrows beside "Current" display to change timestep. Once changed, click Apply...



# Displaying Different Variables

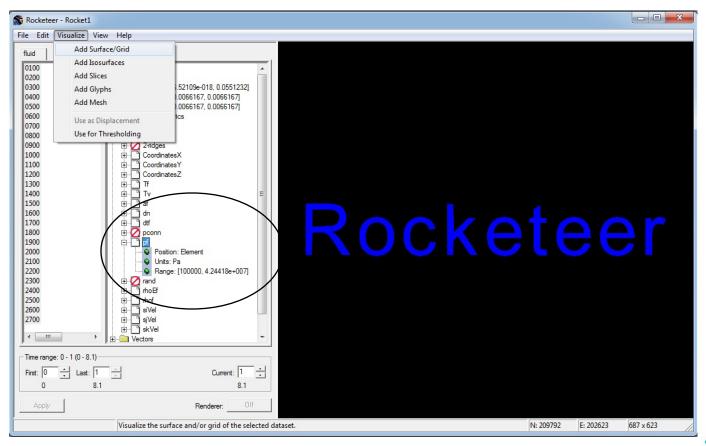
Click on Mesh icon in Variable area.

**Choose Visualize->Remove Surface/Grid** 

**Click on pf variable (pressure)** 

Choose Visualize->Add Surface/Grid

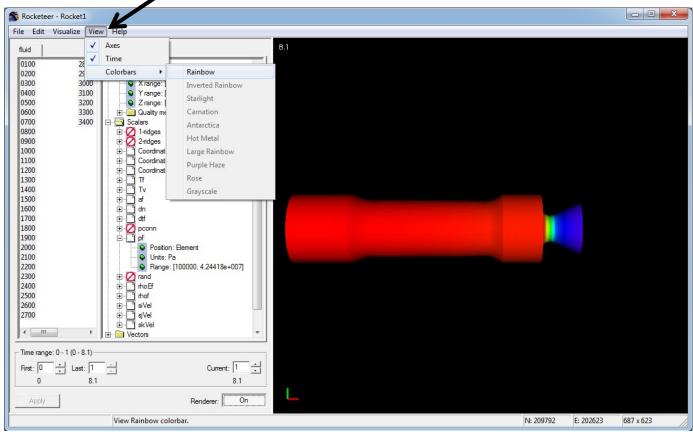
Then click Renderer: On button





#### **Add Colorbar**

Choose View->Colorbars->Rainbow

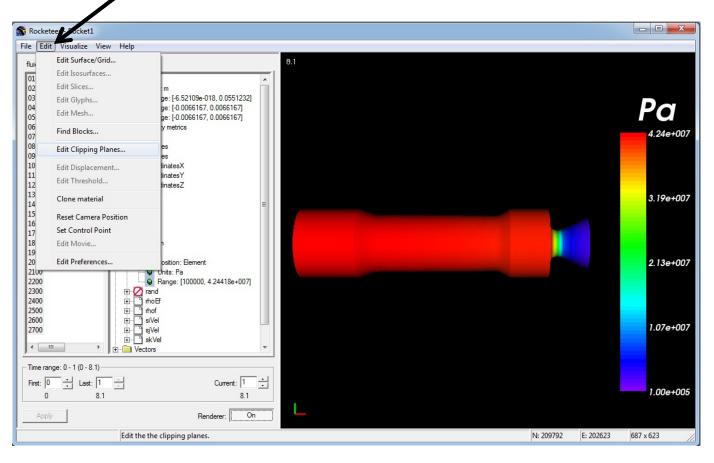


Only one colorbar allowed at a time



# **Clipping Planes**

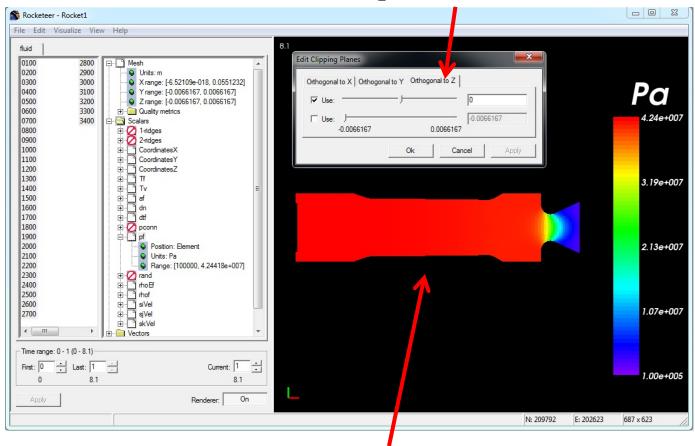
**Choose Edit->Edit Clipping Planes** 





# **Set Clipping Plane**

Choose Orthogonal to Z tab, click first "Use" box, set plane to 0.0

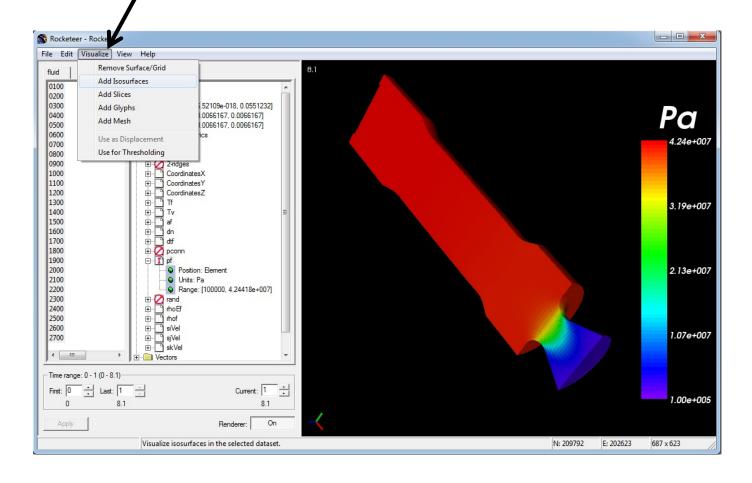


Display is "clipped" down the center...



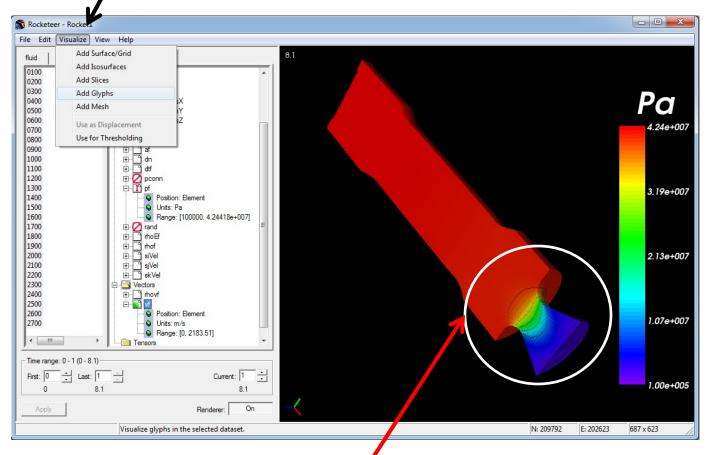
# **Add Display Elements**

With pf still selected, choose Visualize->Add Isosurfaces



#### Add a Second Variable

Expand "Vectors", select vf (velocity), choose Visualize->Add Glyphs



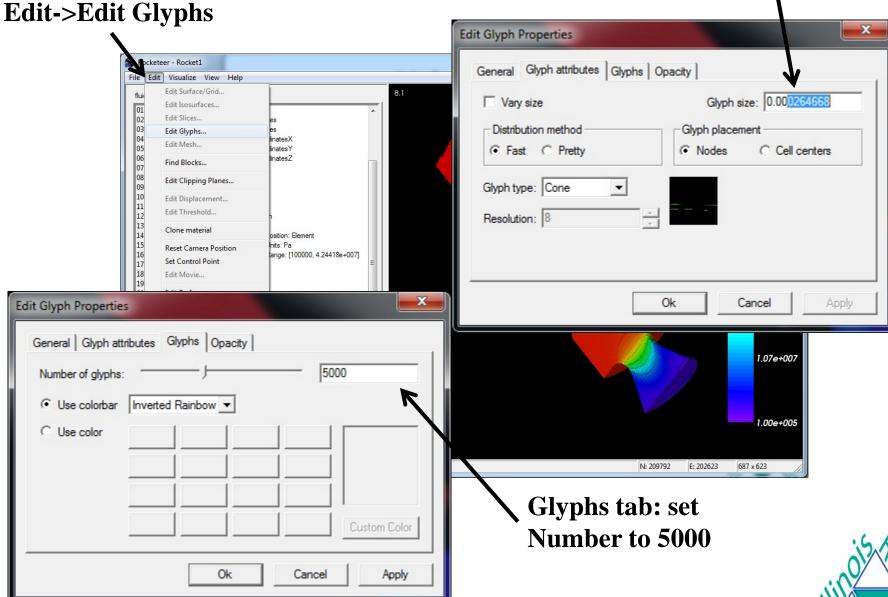
**Isosurfaces showing through Grid surface** 



With vf still selected, choose

**Edit Glyphs** 

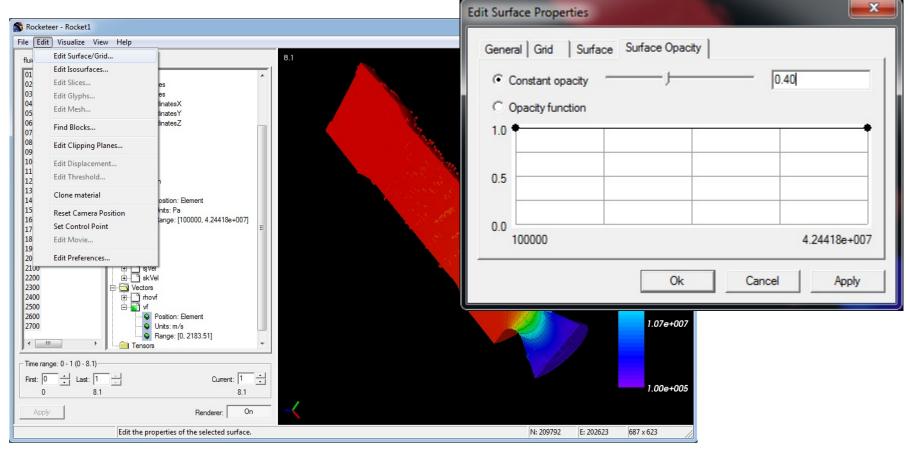
Attributes tab: set size to 0.001



# **Opacity**

Select pf variable, choose Edit->Edit Surface/Grid

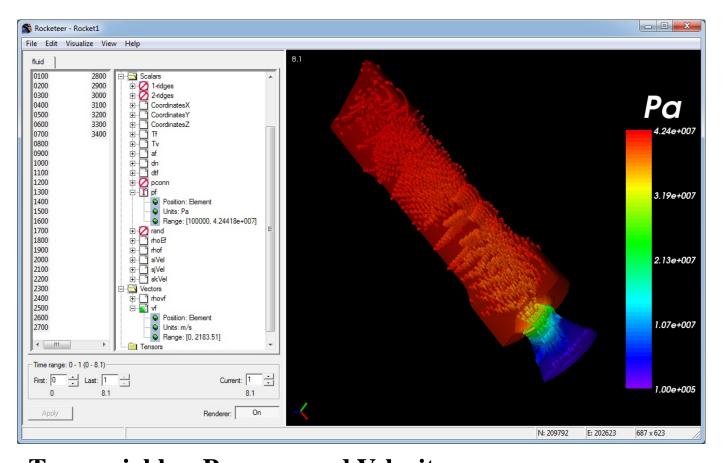
Surface Opacity Tab: set Constant Opacity to 0.40, click OK



Note: a bug in the Windows version of Rocketeer will cause the image to disappear when Opacity is not equal to 1.0. Move the image very slightly and it will reappear



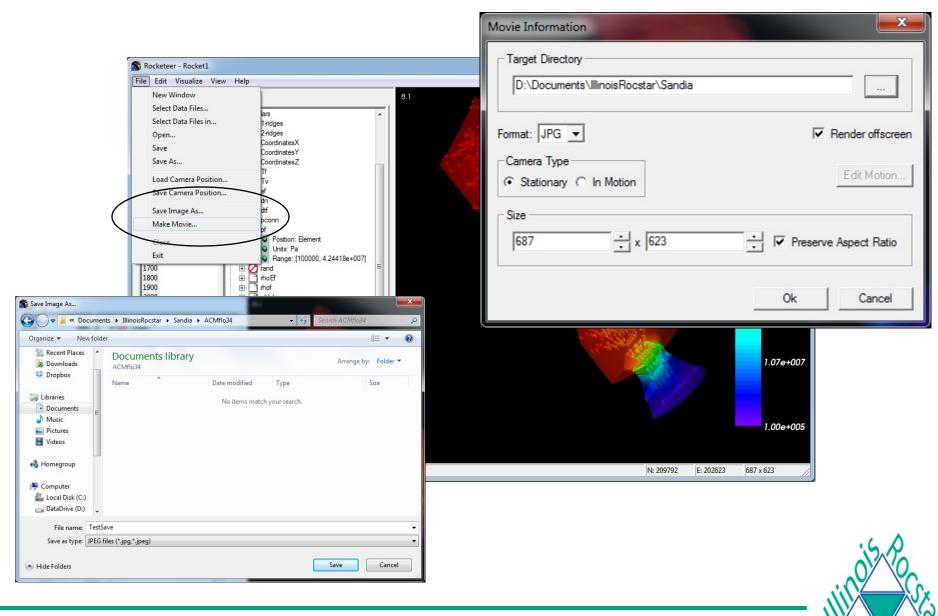
#### **Final Display**



Two variables: Pressure and Velocity
Pressure volume and isosurfaces; colorbar
Velocity Glyphs
Translucent pressure volume



# **Saving Images and Movies**



#### Much More...

- http://www.csar.uiuc.edu/F\_software/rocket eer/v1.3/Rocketeer\_Users\_Guide.htm
- Multiple materials (fluid and solid, surface)
- Block Selection
- Movie Fly-throughs
- Slices
- Bounding boxes...

