What Runs Where on Athena - Numerical Software

Analysis/Plotting Software

maple, mint

Description: multi-featured symbolic math program. mint is a debugger for Maple script files similar to lint for C programs

TO RUN:
From Ubuntu Dash: type *maple* in Search box
From command line:

```
athena% add maple
```

```
athena% maple.java & (for Java GUI)
```

```
athena% maple.tty *(for text interface)
```

```
athena% mint scriptfile (to debug a maple script)
```

There are release 2018 User Manual, Programming Guide; also a support site called Maple Primes. You need to register before you can access it; instructions are here

There is a local Web page and What's New. For application examples, see the Maple Application Center. See also the Maple Advisor Database and newsgroup

Maple is available to members of the MIT community under our site license. Information is here.

*See also: *Axiom, CoCoA,Fermat, Mathematica, matlab, maxima, Reduce, SAGE, TeXmacs

Mathematica

Description: multi-featured symbolic math program

Licenses: we have 1000 floating licenses

TO RUN:
From Ubuntu Dash: * type *{}mathematica* in Search box
From command line:

```
athena% add math
```

```
athena% mathematica *(for Notebook/X interface)
```

```
athena% math* *(for text interface)
```

You can also create executable Mathematica scripts using wolframscript: create a file script.m containing Mathematica commands, with first line:

```
#!/afs/athena/software/math/current/bin/wolframscript
```

and make it executable with:

```
thena% chmod +x script.m (this will use the "current" Mathematica version defined by the current link in the math locker)
```

There is an online information center, and Mathematica demonstrations; also a newsgroup and a revision history

Learning resources:
Mathematica Tutorial Collection
Mathematica Learning Center
Wolfram Education Group (for $ items, mentioning MIT site license qualifies MIT users for 30% discount)
The **IMTEK Mathematica Supplement** add-on is a collection of extra packages that offers enhanced functionality in a variety of domain areas, notably in partial differential equations representing physical systems and finite-element analysis. Examples in the supplement use the mesh generators *EasyMesh*, *tetgen* and *triangle* which have been installed on Athena. **This is currently accessible only within Mathematica 5.2**

To access the **IMTEK Mathematica Supplement** *(5.2 only)*, **launch the help browser**: (Help -> Help Browser*, and, from within the browser, search for IMTEK (you may need to run Help -> Rebuild Help Index first). There is extensive documentation and many examples. Mathematica is available to members of the MIT community under our site license. Information is [here](#).

**See also:** *Axiom*, *CalcuiX*, CoCoA, EasyMesh, Elmer, euler, Fermat, FreeFem++, Gerris Flow Solver, maple, matlab, maxima, OpenFOAM, OpenModelica, PARI/GP, Reduce, SAGE, singular, TensorFlow, Torch, TeXmacs, tetgen, triangle

### matlab, simulink

**Description:** interactive "matrix lab" for data analysis tasks involving matrices, graphics and numerical computation. Includes specialized-subject "toolbox" extensions for many topics, including Control, Robust Control, Signal Processing and others. **simulink** is a modular package for analyzing dynamic digital signal processing systems.

**TO RUN:**

From Ubuntu Dash: type `matlab` in Search box

From command line:

```
athena% *add matlab *
```

```
athena% *matlab [isdraft:-ver 9.4] & (-ver switch for new 9.4 release)
```

```
athena% *matlab [isdraft:-ver 9.4] -desktop & *(for desktop launch)
```

```
athena% *matlab [isdraft:-ver 9.4] -tty *(for command-line launch)
```

```
(typing demo at the >> prompt will run through examples)
```

```
athena% *simulink* [isdraft:-ver 9.4] &*
```

**(typing doc at the >> prompt will launch the help system)**

**There are release notes; what's new**

There is latest version documentation at the MathWorks, documentation for using lpsove add-on (Mixed Integer Linear Programming Solver), documentation for using snopt add-on (Constrained Linear or Nonlinear Optimization Solver) and newsgroup.

See here in ipopt section for use of the ipopt nonlinear solver within MATLAB.

There is also an **FAQ**

*See also:* *Axiom, CoCoA, GDL, euler, Fermat, GNU Scientific Library, ipopt, IT++, Julia, LabVIEW, lpsove, maple, Mathematica, Meep, Numerical Recipes, NumPy, octave, OpenModelica, Reduce, SAGE, scilab, snopt, TensorFlow, Torch, TeXmacs*

**Note:** Matlab is now available to MIT faculty, staff and students at no cost from IS&T Software Distribution.

### tecplot

**Description:** Advanced data plotting package that can do many types of 2d and 3d plots. Chorus is a utility for managing CFD simulations.

**TO RUN:**

From Ubuntu Dash: type `tecplot` *in Search box

From command line:

```
athena% *add tecplot*
```

```
athena% *tecplot & *(to run Tecplot)*
```

```
athena% *chorus* & *(to run Chorus)*
```

**There are 360ex-18 R1 pdf manuals, Chorus pdf manuals, a local Web page, a vendor site and 360ex-18 R1 release notes**

*See also:* *gnuplot, Grace, matplotlib, ParaView*

**Note:** *If you are running Tecplot on a virtual machine or displaying it remotely, you may need to launch it with the *-mesa flag to get it to work correctly.