What Runs Where on Athena - Numerical Software

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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 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 -script
and make it executable with:
athena% **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*, *CalculiX, 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 [istdraft:-ver 9.4] &** (**-ver** switch for new 9.4 release)
athena% *matlab [istdraft:-ver 9.4] -desktop & *(for desktop launch)
athena% **matlab*** [istdraft:-ver 9.4] -tty *(for command-line launch)
(typing **demo** at the **>>** prompt will run through examples)
athena% **simulink*** [istdraft:-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 lpsolve 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, lpsolve, 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 **t{***}ecplot *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