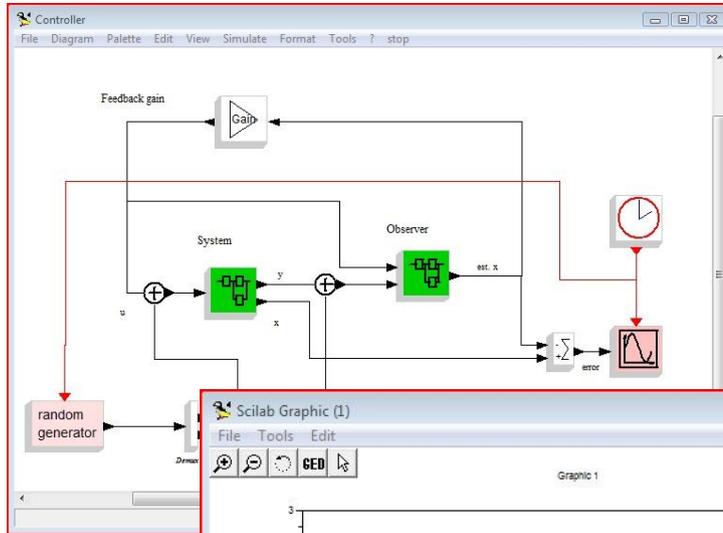




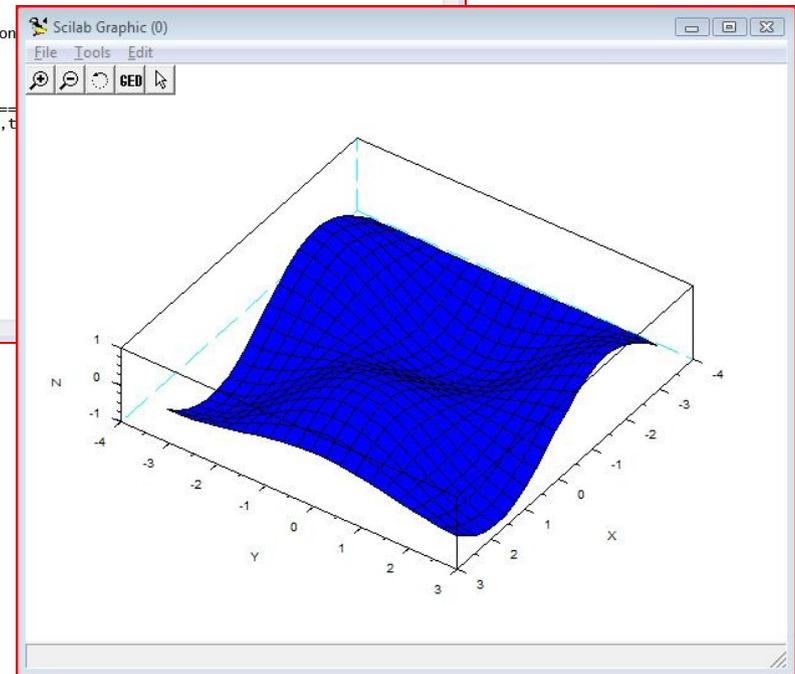
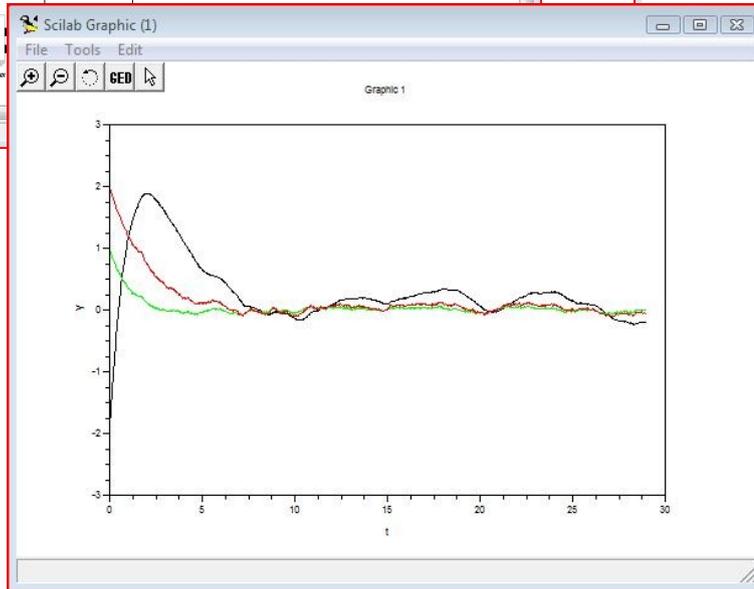
Introduction to Scilab



```
scilab-4.1.2 (0)
File Edit Preferences Control Editor Applications ?

scilab-4.1.2
Copyright (c) 1989-2007
Consortium Scilab (INRIA, ENPC)

Startup execution:
loading initial environ
-->plot3d()
Demo of plot3d()
=====
t=-%pi:0.3:%pi;plot3d(t,t
-->
```





Introduction to Scilab



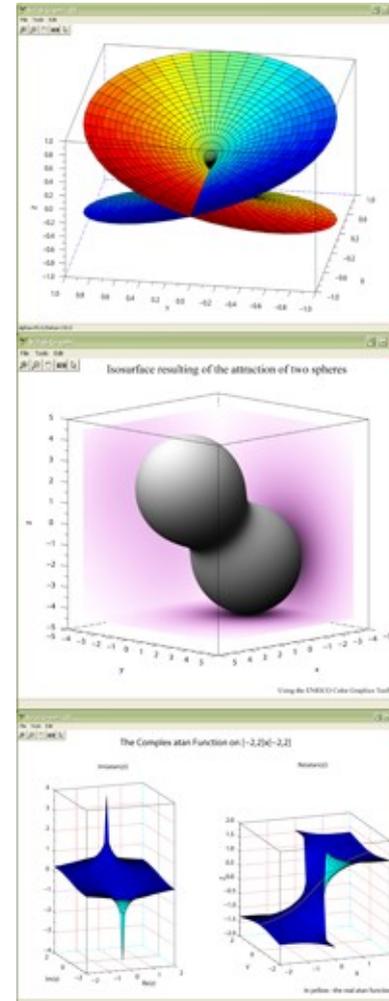
- Background: Why I use Scilab
 - Picking the right tool for the job
 - Free, open source software
 - Educational use
 - Startup and small business
 - Current fields of interest



Agenda



- What is Scilab?
- How to Install Scilab
- Scilab Basics
- Examples

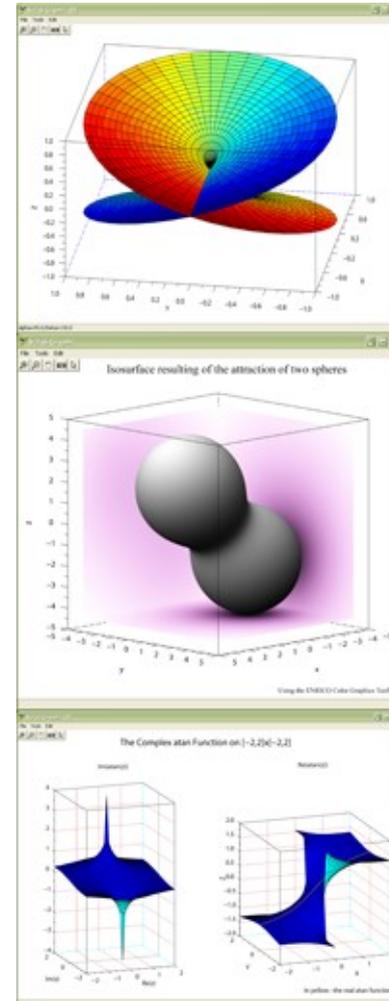




Agenda



- **What is Scilab?**
- How to Install Scilab
- Basic Features
- Examples





What is Scilab?



- A free scientific software package for numerical computations
- Geared toward science and engineering
- Many Built-in math and scientific functions
- Large number of tool boxes available

<http://www.Scilab.org>



What is Scilab?



- 2-D and 3-D graphics, animation
- Linear algebra, sparse matrices
- Polynomials and rational functions
- Interpolation, approximation
- Simulation: explicit and implicit systems of differential equations solvers
- Scicos: hybrid dynamic system modeler and simulator
- Classic and robust control, LMI optimization
- Differentiable and non-differentiable optimization
- Signal processing
- Graphs and networks
- Parallel Scilab
- Statistics
- Interfaces with Computer Algebra (Maple, MuPAD)
- Interfaces with Fortran, Tcl/Tk, C, C++, Java, LabVIEW

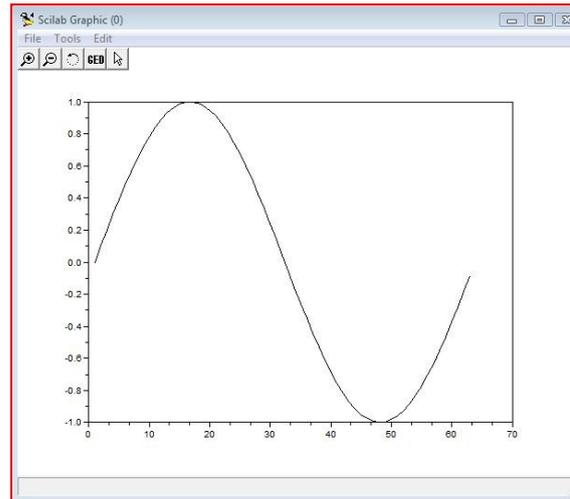


What is Scilab?



- Where does Scilab fit in the engineer's toolbox?
- Scilab is a high level scripted language

```
-->a = sin([ 0:0.1:2*%pi ]);  
-->plot2d(a);
```



- Comparable to Matlab, Octave, etc.
 - Contains Matlab portability and migration features



What is Scilab?



- Matlab to Scilab

- M2SCI tools: Scilab Help → Matlab to Scilab Conversion Tips
- www.scilab.org → Documentation → Matlab/Scilab functions
- wiki.scilab.org → From Matlab To Scilab
- Built in Matlab to Scilab Translator



What is Scilab?



- Scilab was originally developed by INRIA (The French National Institute for Research in Computer Science and Control) and ENPC (The National School of Civil Engineering).
- Since May 2003 Scilab development is overseen by the Scilab Consortium:

ANAGRAM TECHNOLOGIES, APPEDGE, ARTENUM, ATMEL ROMA, AXS INGENIERIE, CEA, CNES, DASSAULT AVIATION, ECOLE CENTRALE DE PARIS, ECOLE POLYTECHNIQUE, EADS, EDF, ENGET, ENPC, ESTEREL TECHNOLOGIES, IFP, INRIA, KLIPPEL, MANDRIVA, PSA PEUGEOT CITROËN, RENAULT, SCALEO CHIP, STYREL TECHNOLOGIES, THALES and TNI



What is Scilab?



- Scilab 4.x and earlier fall under the Scilab license
- Scilab license allows you to:
 - use freely Scilab for non commercial use
 - use freely Scilab for commercial use if you do not use it as a derived software (ie a modified Scilab) or a composite software (ie Scilab included in another software).
- Scilab license forbids you to:
 - use a composite or derived version of Scilab for commercial uses without asking INRIA authorization.

See http://www.scilab.org/legal/index_legal.php?page=legal_faq details



What is Scilab?



- Scilab 4.x and earlier license is **not** GPL v2 compatible
- Free Software Foundation does not consider Scilab “free” software because it does not allow commercial distribution of a modified version.
- Scilab 5 license has changed to the CeCILL (<http://www.cecill.info/index.en.html>), which addresses both of the above.



What is Scilab?



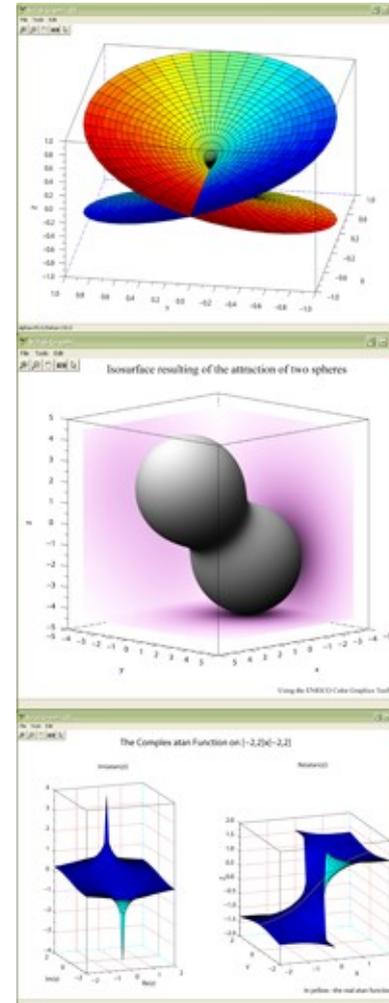
- Websites for more information:
 - Scilab Home – <http://www.scilab.org>
 - Scilab Wiki – <http://wiki.scilab.org>
 - SCICOS.org Simulator
- Books
 - Scilab book list – <http://www.scilab.org/publications/>
 - *Engineering and Scientific Computing with Scilab*, ISBN 0-8176-4009-6 (C. Bunks, J.P. Chancelier, F. Delebecque, C. Gomez, M. Goursat, R. Nikoukhah, S. Steer)
 - *Modeling and Simulation in Scilab/Scicos*, ISBN : 0-387-27802-8 (Stephen Campbell, Jean-Philippe Chancelier and Ramine Nikoukhah)



Agenda



- What is Scilab?
- ***How to Install Scilab***
- Scilab Basics
- Examples





How to install Scilab



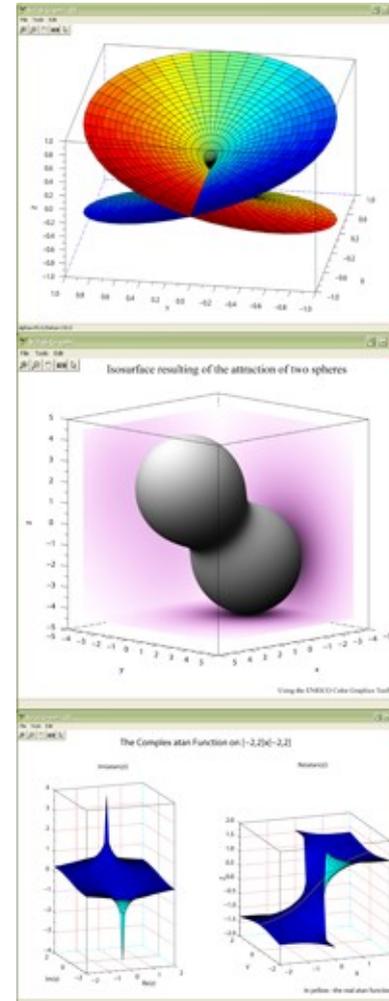
- <http://www.scilab.org>
- Windows, Linux, OS X, Unix support
- Extra tool boxes and source
- Cross platform, learn once – use anywhere



Agenda



- What is Scilab?
- How to Install Scilab
- **Scilab Basics**
- Examples





Scilab Basics (Live)



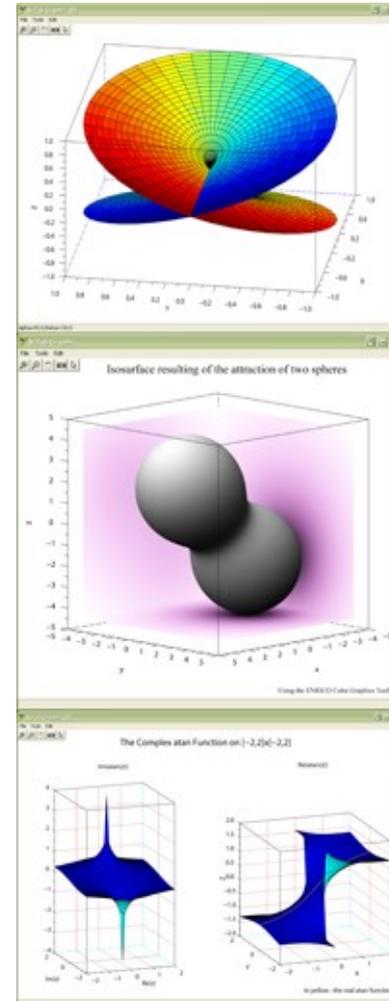
- Scilab window and command prompt
- Basic command line operations
- Menus: File, Edit, Help, etc.
- Interactive Help
- Built-in Demos



Agenda



- What is Scilab?
- How to Install Scilab
- Scilab Basics
- **Examples**





Examples (Live)



- Simple command line examples
- Plotting: zooming, formatting
- Functions and .SCI files
- File I/O, binary and text
- GUI tools: file open, buttons, selections
- Exporting plots to documents
- SCICOS simlutaion



Next Session



- Real world examples
- Advanced features
- Scicos Demo

Let us know if there is a problem set you would like to see!

Aaron.McFarland@GannonSystems.com

www.gannonsystems.com

