

The background of the slide features a deep space image of a galaxy, possibly the Andromeda Galaxy, with a bright central core and spiral arms. Overlaid on this image are several thin, white, elliptical lines that represent orbital paths or trajectories, creating a sense of motion and scientific exploration.

iPython

iPython

- An improved interpreter for Python
- To start, go to your terminal and type

ipython

- You should see something like:

```
Python 2.7.1 (r271:86832, Jul 31 2011, 19:30:53)
Type "copyright", "credits" or "license" for more information.

IPython 1.0.dev -- An enhanced Interactive Python.
?          -> Introduction and overview of IPython's features.
%quickref  -> Quick reference.
help       -> Python's own help system.
object?    -> Details about 'object', use 'object??' for extra details.

Welcome to pylab, a matplotlib-based Python environment [backend: MacOSX].
For more information, type 'help(pylab)'.

In [1]:
```

What it adds

- Bash commands from within the prompt
- try doing 'ls' from within ipython

```
In [3]: ls
Desktop/      Downloads/    Movies/      Public/      parsetab.py  projects/
Developer/    Games/       Music/       bin/         parsetab.pyc python/
Documents/    Library/     Pictures/    nltk_data/   pgadmin.log  teaching@
```


What it adds

- Much better help formatting
 - For most objects, just do: object?

```
In [2]: map?
```

```
Type:      builtin_function_or_method
```

```
String Form:<built-in function map>
```

```
Namespace: Python builtin
```

```
Docstring:
```

```
map(function, sequence[, sequence, ...]) -> list
```

Return a list of the results of applying the function to the items of the argument sequence(s). If more than one sequence is given, the function is called with an argument list consisting of the corresponding item of each sequence, substituting None for missing values when not all sequences have the same length. If the function is None, return a list of the items of the sequence (or a list of tuples if more than one sequence).

What it adds

- Colored tracebacks

```
In [1]: adfjkl
ERROR: NameError: name 'adfjkl' is not defined [IPython.core.interactiveshell]
-----
NameError                                Traceback (most recent call last)
<ipython-input-1-926b037c3516> in <module>()
----> 1 adfjkl

NameError: name 'adfjkl' is not defined
```

What it adds

- ‘Magic’ functions

```
In [9]: run potential.py
```

```
In [10]: %timeit range(1000)
100000 loops, best of 3: 8.49 µs per loop
```

```
In [11]: %history
adfjkl
map?
ls
cd
cd Downloads
ls
run sun_center.py
ls *.py
run potential.py
%timeit range(1000)
%history
```


What it adds

- 'Magic' functions

```
In [14]: %rerun 1-4
=== Executing: ===
adfjkl
map?
ls
cd
=== Output: ===
ERROR: NameError: name 'adfjkl' is not defined [IPython.core.interactiveshell]
-----
NameError                                Traceback (most recent call last)
<ipython-input-14-71790a01e83a> in <module>()
----> 1 adfjkl
      2 get_ipython().magic(u'pinfo map')
      3 ls
      4 cd

NameError: name 'adfjkl' is not defined
```

iPython Notebook

- Browser-based notebook that lets you write code, text, equations (latex), and other rich media **in-line**
- Provides a Mathematica-like interface
- Starts a lightweight web server on your machine, and editing done in your web browser (needs Chrome or Firefox)

iPython Notebook

Demo!