

# **MATH & SCIENCE**

# ATOM IN A BOX

## WHO ?

DEAN DAUGER

## WHAT ?

ATOMIC VISUALIZATION TOOL

## WHERE ?

[WWW.DAUGER.COM/ORBITALS/](http://WWW.DAUGER.COM/ORBITALS/)

## HOW MUCH ?

\$20.00

## WHAT ELSE ?

Atom in a Box is a tool for visualizing atomic orbitals in three dimensions, in real-time. Created as a scientific and educational program, Atom in a Box should also be of interest to eye candy enthusiasts. You don't need to be a budding physicist or Quantum Mechanic to appreciate the magnificent images generated by this program.

I'll confess that I couldn't begin to describe the physics involved, so let's just say, as the author does that "this program raytraces through a three-dimensional cloud density that represents the wavefunction's probability density and presents its results in real-time." The results are color animated clouds, which represent the "probability distribution of an electron bound to a Hydrogen nucleus."

You can fiddle with numerous settings, including the color, number of samples, gamma, spectrum, slice (which lets you view a slice through the wavefunction), superimposition, and sound. A readme file provides more details about orbitals and how to tweak the settings. The possibilities are endless, and experimentation is rewarded in real-time.

Atom in a Box comes with 16 stunning sample files (try Flat Seven,  $n=3$  Superposition, Triangular State, or Warp Core State). You can display your creations in the Orbital Window or select Screen Saver to view them full screen.

## SO WHAT ?

**Atom in a Box is a sophisticated visualization and learning tool, and shouldn't be overlooked by those who appreciate the beauty concealed in atoms.**

# BREVE

## WHO ?

SPIDERLAND

## WHAT ?

SIMULATION ENVIRONMENT

## WHERE ?

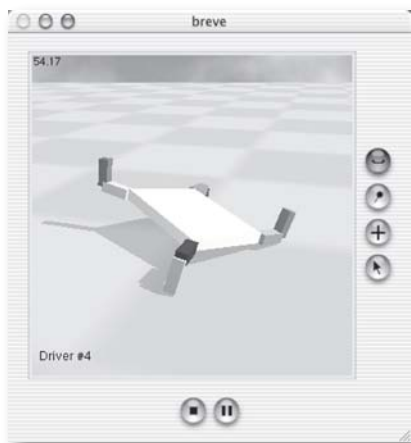
WWW.SPIDERLAND.ORG/BREVE/

## HOW MUCH ?

FREE

## WHAT ELSE ?

breve describes itself as a "3D simulation environment for simulation of decentralized systems and artificial life. ... breve also includes an experimental physics engine allowing the user to implement real-time physical simulations." But don't be intimidated by that description. You don't have to be a physicist to be fascinated by this program. If nothing else, you'll love (or pity) the breveWalker screen saver that's also included on the enclosed CD-ROM.



Simulations are displayed in a viewer. Select a demo from the Demo menu, and click on the Play button. There are also controls that allow you to rotate, zoom, or move the camera in real-time. You can save a snapshot or QuickTime movie of your simulation as it runs.

breve comes with ten simulations, including Gatherers (which simulates “a decentralized food gathering algorithm”), Swarm (a bird flocking simulation), and Symphony (where each object plays a tune). Selecting a Symphony object mutates it into three new objects, each with subtle changes to the tune. My personal favorite is Walker, which simulates the evolution of a simple creature from a crawler into a walker using a genetic algorithm. The author describes this one as “thirty monkeys attempting to learn to drive a bus—they take turns one at a time, breeding the best individuals together to replace the worst individuals.” It can take a long time for the Walker to evolve, so don’t be surprised if you find yourself captivated by your creature’s flailing attempts to get on its feet.

Simulations are written in a simple language called “steve.” If you’re not content to play with the demos, you can create your own simulations by perusing the documentation in the excellent Help file.

## **SO WHAT ?**

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breve is an engaging—and entertaining—simulation laboratory. The breveWalker screen saver appeals to the eye and the mind, and will have you rooting for it to walk.

# SOLSCAPE

## WHO ?

STIMPSOFT

## WHAT ?

SOLAR DATA BROWSER

## WHERE ?

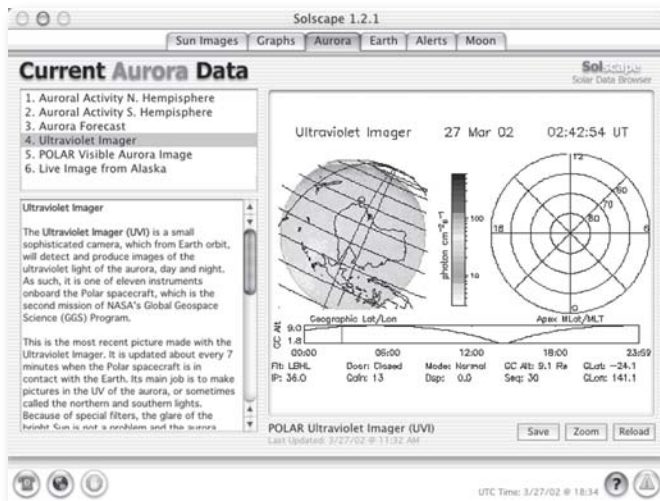
WWW.STIMPSOFT.COM

## HOW MUCH ?

159% FREE

## WHAT ELSE ?

Solscape grabs a wealth of data in real time from NASA and several other sources, and displays the information in a browser window.



There are tabs for Sun Images, Graphs, Aurora, Earth, Alerts, and Moon. The Sun Images tab displays several gorgeous images of the sun taken by EIT (Extreme Ultraviolet Imaging Telescope) and LASCO (Large Angle Spectrometric Coronagraph). The Graphs tab offers numerous esoteric astronomical graphs that are sure to impress your friends, like the ACE Magnetometer and the Radio Flux Progression. The Aurora and Earth tabs offer a number of impressive images, and

you can view global satellite images of the entire planet, or images of Eastern or Western United States (as Infrared, Visible, or Water Vapor images). The Alerts tab gives Solar activity alerts and warnings, and solar data, including sunrise and sunset information, sunspot count, radio flux, solar wind speed, proton density, and more. Finally, the Moon tab gives the current phase of the moon, along with fullness percent, days till full, and days till new (photographically represented).

Like all StimpSoft software, the interface is polished and user-friendly. Solscape is a great resource for amateur astronomers, or students of astronomy. Everyone else may find it mostly useless, but fascinating nevertheless.

### **SO WHAT ?**

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Cool images, fun stuff. Now if only it told you the *local* weather.