

**LIGHTSPEED SCREENSAVER**      Version 9.1

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Requires: Windows 98, 2000, Me, XP, Vista, or 7  
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## **QUICK START**

After the installation is finished, run the screensaver in interactive mode. Use the Windows screensaver control panel and select the SETTINGS button to start the program.

There are two windows: A toolbar window and a starfield window.

Using the pull down selector on the toolbar window, you can select a starfield to view.

## **VIEW ALL MODULES**

Click on the button marked "G" on the toolbar to open the global settings window.

At the bottom of the global settings window, check the box labeled "Check (set) all modules for sequencing". Then close the global settings window by selecting OK.

On the toolbar window, change the spin control that is next to the clock icon to -5 (minus five).

If you followed the above steps, the starfield window should now be sequencing through ALL of the modules. Each will be shown for an amount of time depending on the spin control number. Make this number bigger to increase the time between modules. When this timer is set to a negative value, the order in which the modules play is RANDOMIZED (shuffle). Change this to a positive value if you want the modules to play in alphabetical order.

To disable any of the individual modules, un-check the check box next to its name on the drop down list. Use this check box to enable or disable any module. To remove them all, go back to the global settings window and check the "Un-check (clear) all modules for sequencing".

## **EDITING**

In the upper left corner of the toolbar is a button which expands or contracts the size of the toolbar revealing the Editor controls. Right mouse click over any of the controls for an explanation of what the control does.

## BASIC OPERATION

To enter 'interactive mode': Press the ESC while the screensaver is active. Or, select the "Settings" button on the Windows screensaver control panel.

When the screensaver is in interactive mode, a control panel is displayed that has a drop down list that allows you to select different modules. On this control panel are several buttons:

The button marked with a “**G**” opens the Global Settings window.

The button marked “**Full Screen**” will show the starfield window at full screen. [ Use the ESC key to return to the control window. ]

The “**O**” button expands or contracts the toolbar to access the Editor controls.

The “**Play**” button starts a module playing from its beginning.

The “**Help**” button shows a quick list of keyboard commands. Press the “**INFO**” button on this Help window for more information.

## FLIGHT

To fly it yourself, hold the mouse cursor over the starfield window and 'click' the RIGHT mouse button exactly once. The right mouse button is used to toggle between "mouse control" and "no mouse control". When the mouse control is enabled, the mouse movement controls your view direction. If you press and hold the LEFT mouse button, the travel direction changes to become the same as the view direction. Depending on the selected Module, the flight mode may be unpredictable. Each module controls various things that affect flight ability (or disability).

## GLOBAL SETTINGS

This window has settings that you can customize.

Using the RESOLUTION settings you can control the Backdrop Shape resolution. The higher this number is set, the slower your rendering will be -- and the 'rounder' the shape of the backdrop image will be. This is a global control that overrides the individual settings in each module only if its value is less than the individual settings. If the BACKDROP SIZE is set to 1, the backdrop size is reduced and less graphic ram

is used. Use this control if there isn't enough graphic ram and the backdrop image is dropping out.

The LCD controls are useful for LCD displays (see below under Lighting).

## **LIGHTING**

To get the best effect from the software, make sure the brightness and contrast controls of the display monitor are adjusted for maximum brightness with a dark black level. Black should be BLACK, not dark gray. Best results are obtained in a dark room with little or no ambient light.

LCD monitors may require adjustment of the Backdrop Brightness and/or the Pixel size controls that are found on the Global Settings window (small button labeled "G"). LCD users may find that lowering the background brightness and increasing the pixel size will improve the 'look'.

## **SPEED**

For best operation, it is important that your system be fast! There are several things that will affect the speed of rendering:

Besides processor speed and graphic adapter acceleration, the resolution of your desktop will affect the speed of rendering. 16 bit color may be a lot faster than 24 or 32 bit color. A smaller desktop will speed things up as well.

In the Global settings window is a control for setting the Backdrop Shape resolution. This can affect the speed in a big way. Low values will speed things up a lot.

Additionally, the Refresh Rate of your display will control the maximum frame rate.

Depending on your graphic adapter, there may be some System Control Panel settings that will affect the rendering speed as well. This program uses OpenGL for rendering, so anything that speeds up the OpenGL drivers will speed things up.

Lastly, it is important that your machine not be busy doing other things. Other programs running will use available processor time and may degrade the performance.

## ANATOMY OF A MODULE

A "Module" is a sort of 'movie' that is played back when the module is selected. This movie is created using the editor in combination with the mouse and keyboard.

The starfield display can be thought of as a facade that is like Ptolemaic astronomy. In this universe, you are always in the center. You do not move, but everything else does move. If you look in any direction, you see the inside surface of a great celestial sphere. This sphere is of a fixed size and is so large that it appears to be very very far away. It is onto this sphere that the "Backdrop image" is wrapped. Inside of this great celestial sphere is where all the action happens: Up to 30000 'stars' can be placed within a cubic area that is centered around you. When you appear to move, by increasing the thrust, it is the stars that actually move. As the stars move, they will eventually find themselves going off the edge of this cubic space -- where they disappear only to reappear on the exact opposite side of the 'cube'. It is within this universe, all of the elements are present to create a good illusion of a fly-through-space starfield. After all, with apologies to Copernicus, we are only concerned with illusion and simplicity for the sake of speed itself.

Inside of our universe we have a multitude of controls that determine what our universe will look like. This is a 3 axis universe. X is left-right. Y is up-down. Z is in-out. To find out what each control on the editor does, click the right mouse button while holding the cursor over the control. On the right side of the editor window is a section for generating different star arrangements. Using these controls, you can create different arrangements of the stars. For example, selecting the top radio button will select a random placement. Each time the button marked GENERATE is pressed, all of the star locations will be changed to random locations within the cubic space that holds all the stars.

Once you have adjusted the controls, and you want to save these settings, you can take a 'snapshot' and save it to one of the 7 extra view presets (located along the left side of the editor window). In this way you can capture several different configurations that can be used to make the movie. In the lower left corner is a small red button marked with a R. When this button is pressed, it stays depressed until you select one of the view buttons. Once you press a view button, all of the control settings are saved into that selected view -- and the red R button pops back out. To recall these settings later, simply press the same view button again.

To create the actual movie, you will need to use some keyboard keys. There are a few keys that are used -- see the quick list when you select the Help button on the editor window. The "Quick Tutorial" example below will show the basic procedure for a simple module. After this, the best way to illustrate things is to look at some of the other modules that are included to see what's going on. Use existing modules as a starting point when creating your own modules. Use them as templates.

## A QUICK TUTORIAL

Example #1. We'll start with the module called Sub-Space-7. After you have selected this module, open the editor using the button in the extreme upper left corner of the tool bar. Now, let's change a few things:

On the editor window, locate the slider labeled "Angle" which is near the top of the window towards the left side. Once you locate it, select it and change it to see what it does. This controls the angle of your field of view. As you move it toward the right side, it acts like a wide angle camera. As you move it toward the left side it acts like a telephoto camera. Set it in the middle for now.

Now let's change some colors: Located on the right side, lower portion, are a group of controls which control the color settings. In this group are six slider controls in pairs that are labeled R, G, and B. The left set of R, G, and B control the color of the backdrop image. The right set controls the color of the stars. Change them to some different colors.

Now let's get a feel for the mouse control: Place the mouse cursor in the middle of the starfield window and click the right mouse button exactly once. The mouse now controls the direction of view in our movie. Move the mouse around to see how it affects the view. Although it changes your view, the direction you are traveling in is unaffected. When you press the left mouse button, your travel direction will change to your view direction. Play around with it until you understand how it's working. Notice that if you click the right mouse button again it will toggle the mouse control off. Click it again to turn it back on.

Now that we have made some changes and understand how the mouse works, let's create a very simple movie. To start recording the movie, press the R key on the keyboard. When you do this, a snapshot of your location, view, and all the editor controls is taken and the recording starts. Now, 'fly' around for a few seconds... While you are flying around, it is being recorded. After a little while, end the recording by pressing the keyboard key E. This stops the recording and the movie is now complete. To play it back, press the keyboard key P (or press the button marked PLAY at the top of the editor window). Every time you press P (or Play), the movie will start playing from the beginning.

Once the movie is complete you can save it to disk by pressing the SAVE button on the editor window. Be sure to enter a new name for the module, or you will write over the original module Sub-Space-7.

Example #2. Repeat example #1 with the following additions: After you start the recording, and you have flown around a little, press the F1 key on the keyboard. When you do this, it will select View #1 from the preset views. In this case, it will change to the original settings for this module which are still stored in View #1. Now fly around

some more. Now, end the movie by pressing the keyboard key L. You can now start the playback by pressing the P key (or Play button). When the movie is ended using the L key, it creates a loop at the end -- and the movie will start over automatically. When you play it, it will loop forever.

## KEYBOARD COMMANDS

To end a movie during a recording, there are three methods:

The **E** key will simply end the movie.

The **L** key will loop the movie when it reaches the end.

The **K** key will loop the movie without resetting the original position. Everything starts over, but starting from the location in space where the movie ended.

There are two ways to start a recording:

The **R** key starts the recording.

The **D** key starts the recording and forces View#7 to be selected immediately.

There are several keys that allow you to edit the movie. These can be pressed only during the playback:

The **I** key is used for inserting a recording. When you press it, it will switch to recording mode -- starting at the point where you started the insert.

The **U** key will insert a loop. When the movie is played back, it will loop at this point -- and anything past this point is lost.

The **O** key will insert an end. When the movie is played back, it will end at this point -- and anything past this point is lost.

The remaining keys do the following:

Use the **S** key to stop a playback in progress.

Use the **F1** through **F7** keys to select different preset views. These are the same as pressing the 7 view buttons on the editor window.

Use the **0** through **9** keys to control the "thrust". These keys can not be used during the recording -- they are for testing only.

## EDITOR TIPS AND TRICKS

After you've created some modules, you can still make changes to them without rerecording the whole movie: By altering the view presets, the changes you make will be reflected when you replay the movie. You will still need to save the module if you want the changes to be permanent. There are seven view presets that you can alter. But what about the starting view? This is the one that is captured when you start the recording by pressing the R key. To edit this view (which is actually View #8 preset), it must be currently selected. To select this view, start playback with the P key -- then immediately press the S key (S for stop). View #8 is now selected and you can make changes to the controls. To save the new View #8, depress the red R button in the lower left corner of the editor window and then press the PLAY button -- which will not start playback, but will instead save the new View #8 back into the movie.

On the editor window, in the Generate section, is a small text display which shows the currently selected view. [ It is directly below the SAVE button.] You can use this information to see which view is displayed as the movie plays. This display will change when ever the view changes.

On some sliders, the useful settings involve small changes. Use the mouse wheel or the keyboard arrows to change these sliders with accuracy.

When a module is playing back, it may change to different views. Press the S keyboard key to stop the playback on the current view. If you don't do this when you are attempting to change the settings of a particular view, the view might switch to another view before you can complete your changes and resave the view. Once the movie is stopped by pressing the S key, you can freely select and edit the other views without this worry.

In order for the keyboard keys to function properly, the starfield window must be the currently selected window on your desktop. If you have been changing editor controls, the keyboard keys will not function until you select the starfield window by clicking on it somewhere -- like the title bar.

When changing preset views, some of the editor control settings will glide from the old settings to the new settings. The THRUST, ANGLE, SCALE, POS, TAIL, and COLOR settings each have a separate glide control. For example, if View #1 is set to a wide angle view and View #2 is set to a telephoto view angle: When you change from View #1 to View #2, the view glide slider (located directly below the ANGLE slider) on View #2 will control how long it will take to glide to the new settings. Some of these glide controls have a LOG mode switch which changes the glide from linear to logarithmic.

When you are using the mouse to control the view/travel direction, the right mouse button is used to toggle mouse control on and off. If you toggle it off while still holding the left mouse button down, the left mouse button will continue to have the effect of

being held down even after it is released.

## **BACKDROP IMAGES**

Using the IMAGE button (on the editor window) you can import your own image files. Next to this button are two radio buttons which turn the backdrop on or off. To select a different backdrop image, click on IMAGE: Select the 'mode' you want to use along with the Shape Resolution before browsing for the image file. [Warning: large values for the Shape Resolution may slow the animation down.]

When browsing, backdrop image files **MUST** be located in the Lightspeed "Image" subdirectory -- even though the browse window will let you examine other directories.

Currently, the only supported graphic format is UNCOMPRESSED TARGA 8 BIT or 24 BIT (.TGA). Images can be any size but a 2:1 aspect ratio is recommended ( 1024X512 etc.). If you don't have enough graphic RAM or the image is too large, the backdrop will just drop out and disappear.

There are five different modes for the Backdrop Image:

#1 Backdrop will wrap the image around the outside of the entire space.

#2 Planet Small will wrap the image around a "fixed small sphere" that is centered in the middle of the space.

#3 Planet Large will wrap the image around a "fixed large sphere" that is centered in the middle of the space.

#4 Fly Large will wrap the image around a "large sphere" that moves within the space as you fly around.

#5 Fly Small will wrap the image around a "small sphere" that moves within the space as you fly around.

"Cylindrical projection" is a technical name for images that can be wrapped on spheres. There are lots of these images on the internet. There are many sources that include most planets and moons. The higher the pixel resolution, the better they will look inside of Lightspeed. Note: You might even want to replace some of the included images -- like the Moon and Mars -- with higher resolution versions, since the included image files are somewhat limited in size due to distribution constraints. Some of these images can be found in very large resolutions!

## **UN-INSTALL**

Both the setup program AND Windows have automatic UN-install functions. Use either to uninstall it. If you run the setup program again, after installation, it will prompt you to uninstall the program. The program can also be uninstalled using the Windows Add/Remove Programs -- that is found on the Windows Control Panel.

## **LEGAL**

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