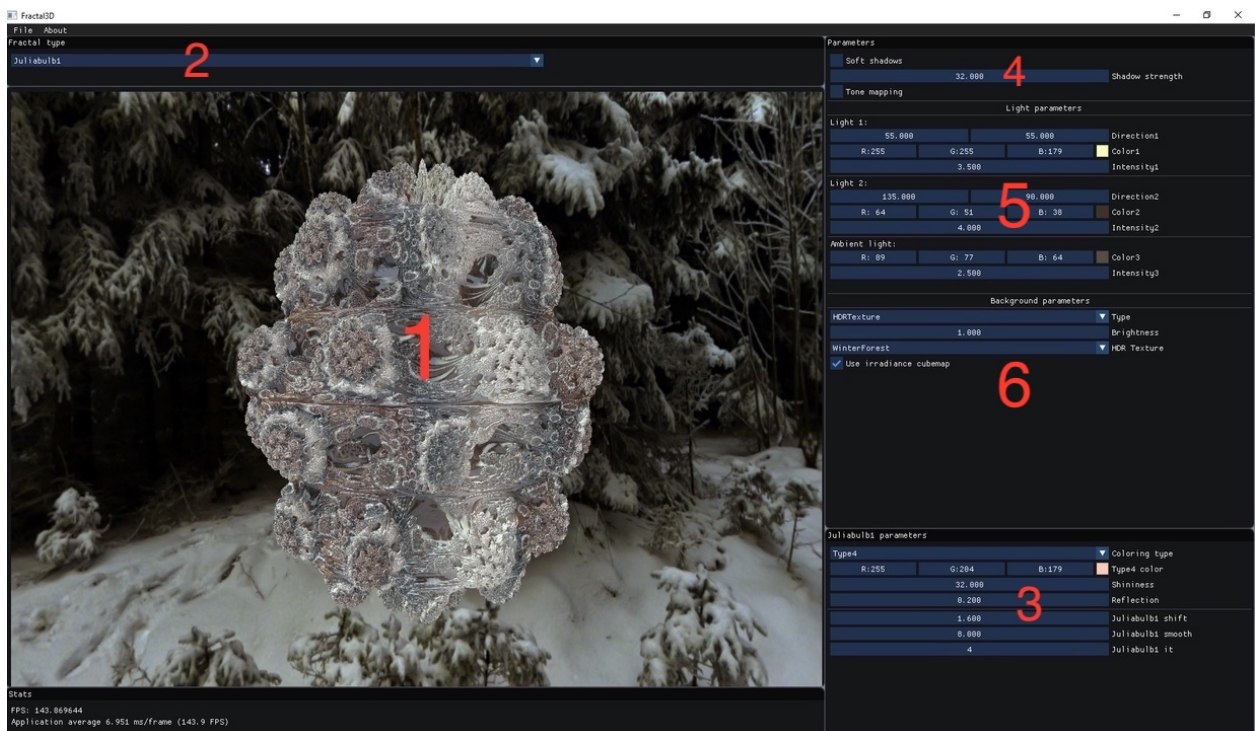


Fractals3D. User Guide

Introduction

A fractal is a set, that has the property of self-similarity (an object that exactly or approximately matches a part of itself, i.e. the whole has the same shape as one or more parts). Fractals3D is a program for creating 3D fractals of different types. The method of orbital traps was used to coloring fractals. This method based upon how close an iterative function, used to create the fractal, approaches a geometric shape, called a "trap". Point and line traps were used in this program. The user can create 3D fractals, change their color, and morph them and then store some pictures.



Camera control

Application has 5 windows: Preview, Parameters, Fractal parameters, Fractal type and Stats.

To change the viewing angle of a fractal you must click on the preview window (1) and then use control of one of 2 types of camera. There are 2 types of camera in the program, which are automatically switched when the fractal type changes.

For fractals in the form of enclosed spaces use: WASD, Space, Left Shift and mouse movement.

For fractals in the form of single object use: mouse movement to rotation and mouse wheel to increase/decrease the fractal.

Parameters

User can select one of fifteen predefined types of fractals (2). Each fractal has its own set of unique parameters and coloring (3). There are 7 types of coloring. Each of type has several colors, shininess and reflection to adjust.

In the parameters window user can enable/disable shadows, and select their strength. Also he/she can enable/disable tone mapping and configure it (4).

There are 3 light sources in the application (5). User can configure it:

1. Light1 (sun): uses color, intensity and direction
2. Light2: color, intensity and direction
3. Ambient light: color and intensity

User can also configure background (6). There are 4 types of Background:

1. Solid: uses only one color as a background
2. Solid with the sun: uses color for background and for the sun
3. Texture: uses some textures as a background. There are several textures by default in the application. It is possible to adjust the brightness of the texture. User can also upload their own textures. Use skyboxes consisting of 6 textures.
4. HDR textures: uses hdr texture as a background. There are several hdr textures by default in the application. It is possible to adjust the brightness of the texture. User can also upload their own textures. He/she can also turn on or off the lighting from the cubemap (enable/disable irradiance map).

Save/Load configurations

Fractals3D support saving and loading of parameters defined by the user, so the same result could be generated again after loading previously saved parameters.

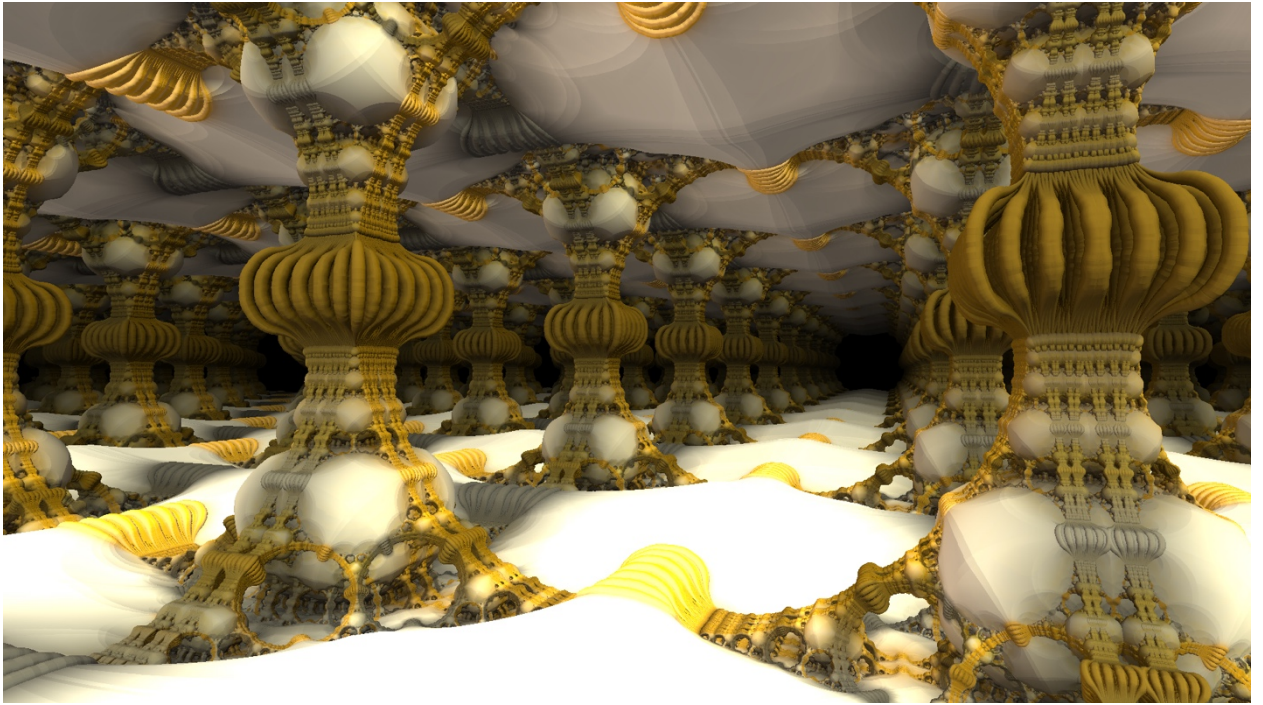
To save configurations use: File > Save Parameters. Select the file name and save it.

To load configurations use: File > Load Parameters. Select the desired file and load it.

Export

Application support export into PNG, JPG, BMP, TGA formats with a maximum resolution of 8640x8640. To export file use: File > Export. Select the desired format, file name and save it.

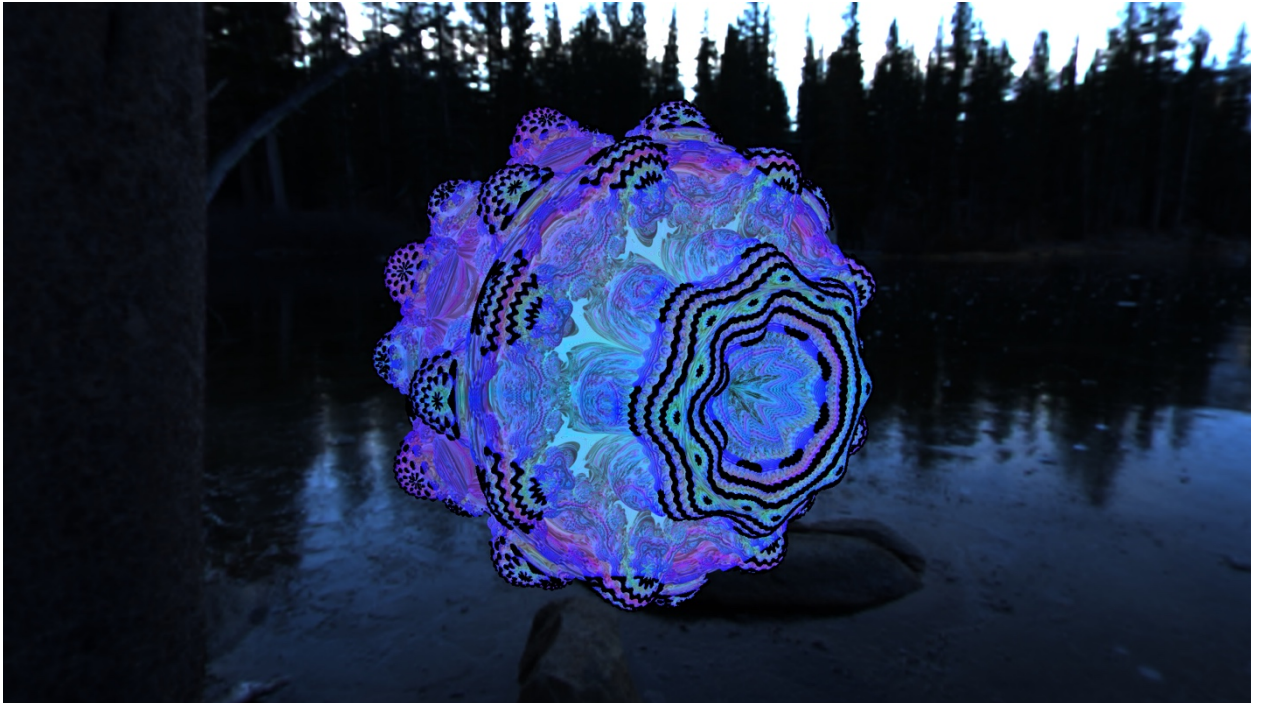
Graphical results



Apollonian fractal



Mandelbulb fractal



Mandelbulb fractal