

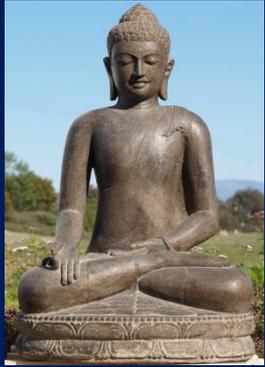
Large zero-order hologram origination

Big_Lito program. V.2

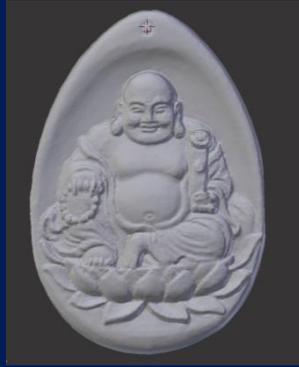


K2-SK holographic.
Zvolen, Slovakia

Artwork preparation



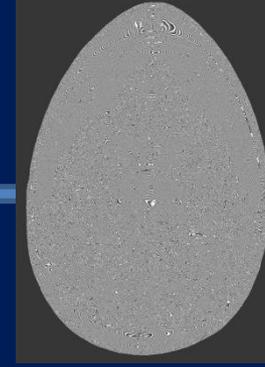
Initial object



3D model



Depth map



Hologram pre-view

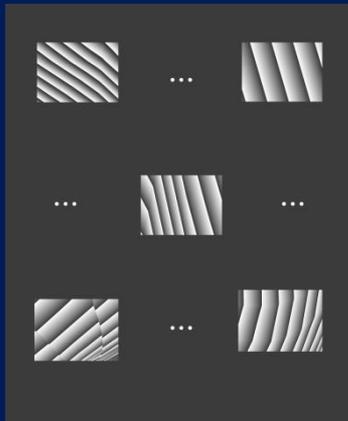
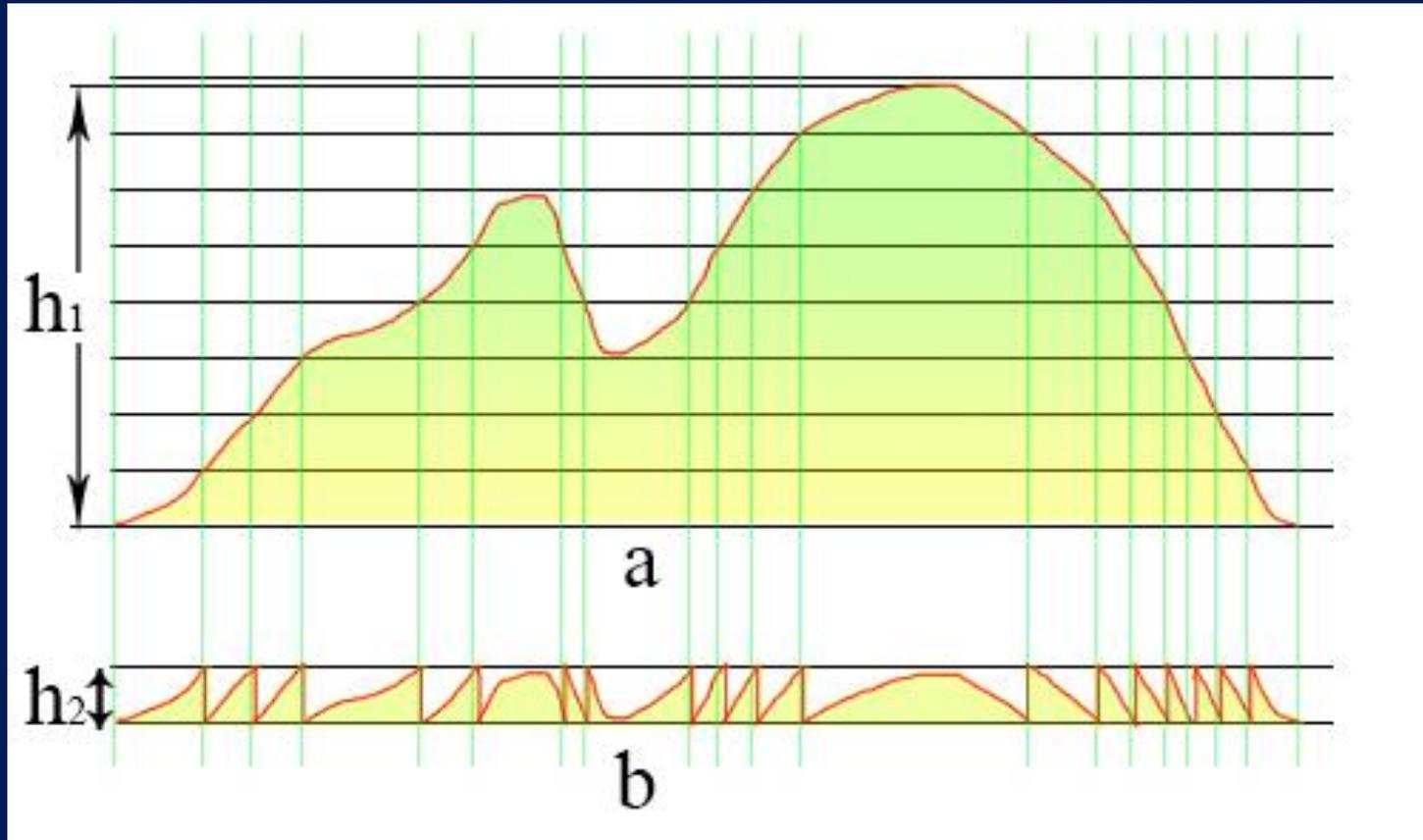


Image frames
1024*768 pix



Relief conversion

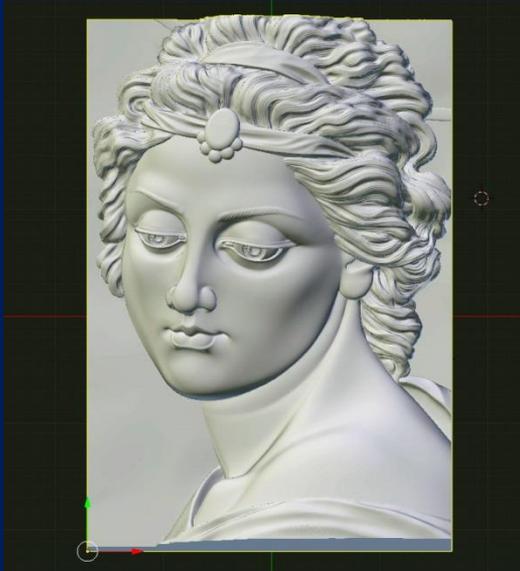


Idea of the method a.-real depth profile, b.- converted depth profile

Common problems with large holograms

1. Max file size in common graphical software is limited by 30 000*30 000 pix. If SLM resolution is 1024*768 pix and frame size is 200*150 micron, it gives $(30\ 000 / 1024 * 0,2) \times (30\ 000 / 768 * 0,15) = 5.86\ \text{mm} * 5.86\ \text{mm}$ holographic image size only.
2. Max color depth is 24 bit = 65536 colors. If one use 256 colors, the total layers number is limited by 256. The image looks too rough.
3. So, common graphical software can't give high quality image in zero-order holograms.

Not enough layers effect



Initial object

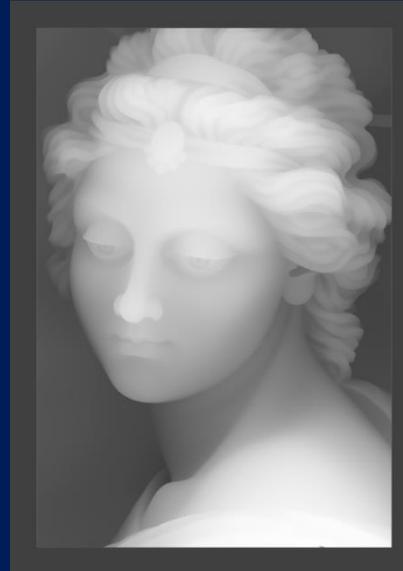
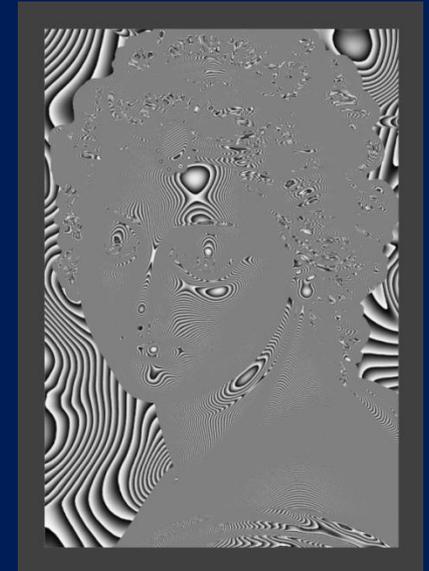


Image depth map

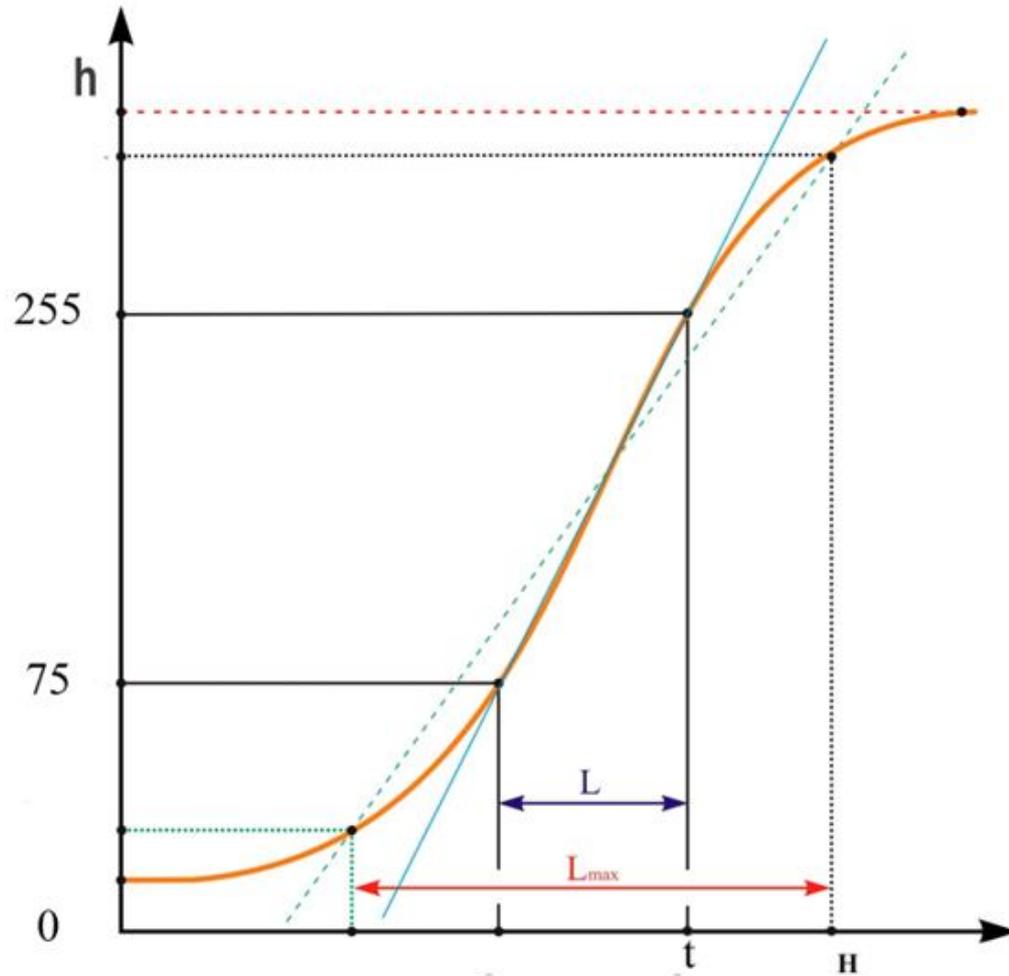


Holographic relief

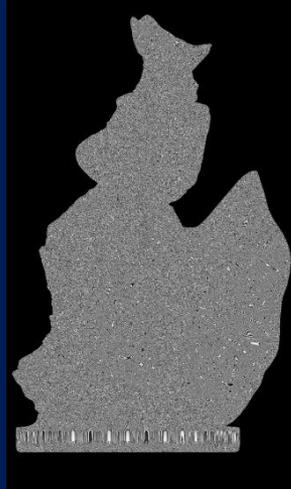
Asymmetrical holographic relief

Depth vs greyscale index

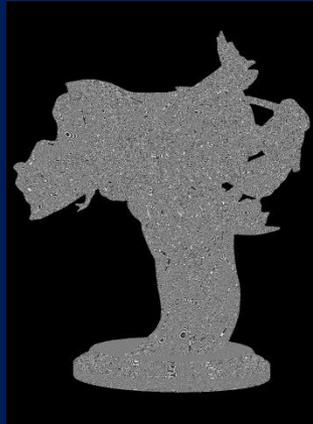
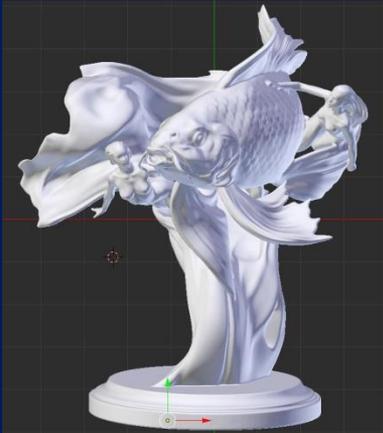
1. h – initial photoresist thickness
2. 255 – greyscale index for max illumination
3. 75 – min illumination for linear part of curve
4. H – exposure



Big_Lito advantages



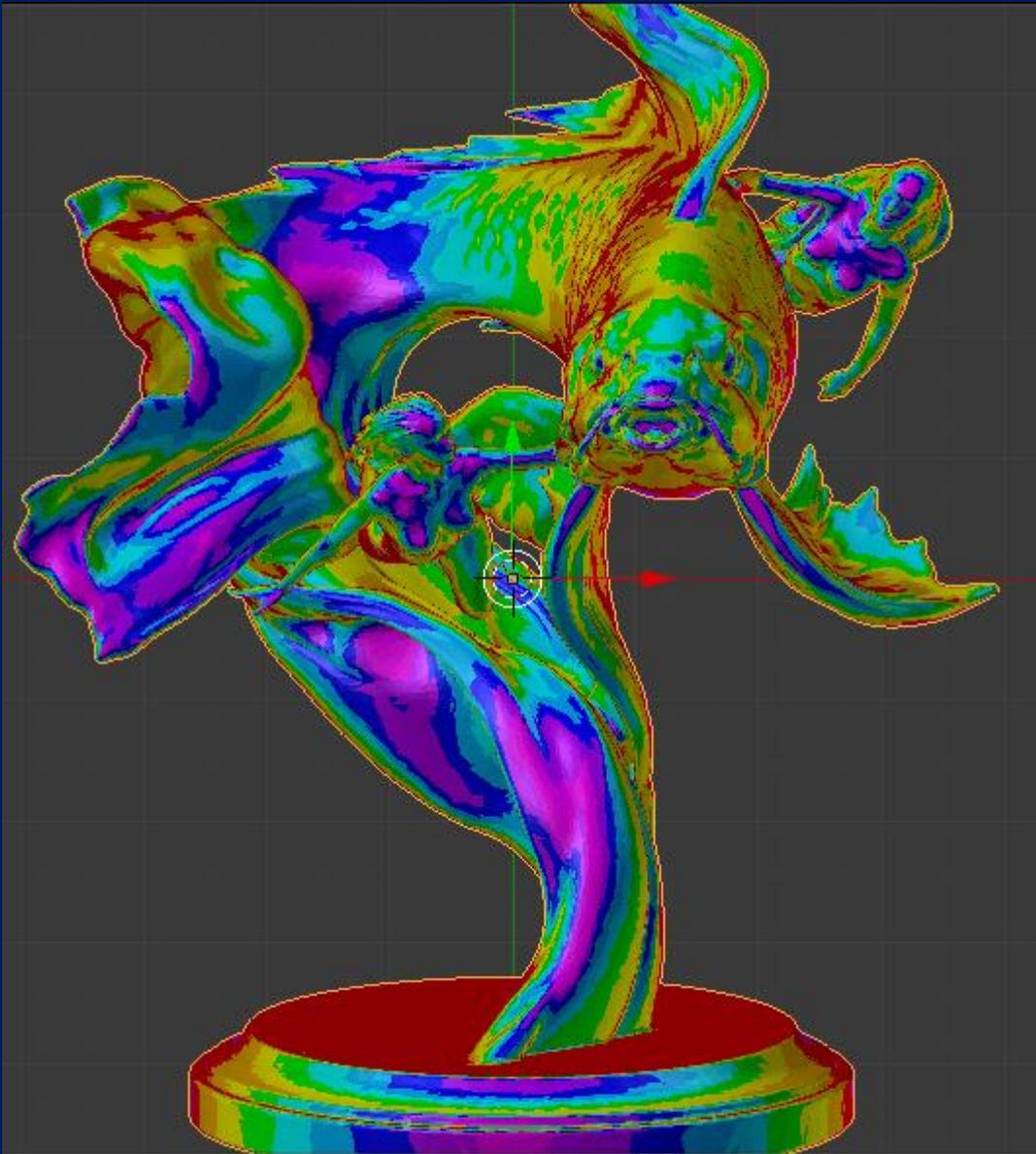
1. No limits for a hologram dimensions.
2. Depth map is not necessary.
3. Max layer quantity is 75 000.
4. Higher image quality with large information volumes.



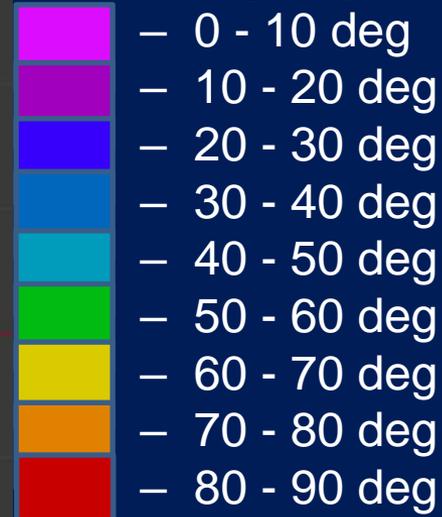
3D model

Pre-view

Flexible layer quantity setup



The program analyses slope angle and choose optimal layer number. Each color is equal to a slope angle with 10 deg step.



Holographer can estimate the image quality before origination

Program interface

BigLitho - Project Manager

BigLitho

Project Management | Generate Exp.Ini | Levels | Generate Gifs | System Settings

Project management

Author: Nikita

	Id	Project name	Author	Created	Last updated	FrameWidth	FrameH
▶	1	Dog_40_smooth	Nikita	29.01.2018	10.02.2018	0,20000000298023224	0,1500000
	11	Dog_40	Nikita	02.02.2018	09.02.2018	0,20000000298023224	0,1500000
	17	PlunderbussPete	Kolja	02.02.2018	08.02.2018	0,20000000298023224	0,1500000
	18	Buddha_40	Nikita	03.02.2018	08.02.2018	0,20000000298023224	0,1500000

Flexible projects control

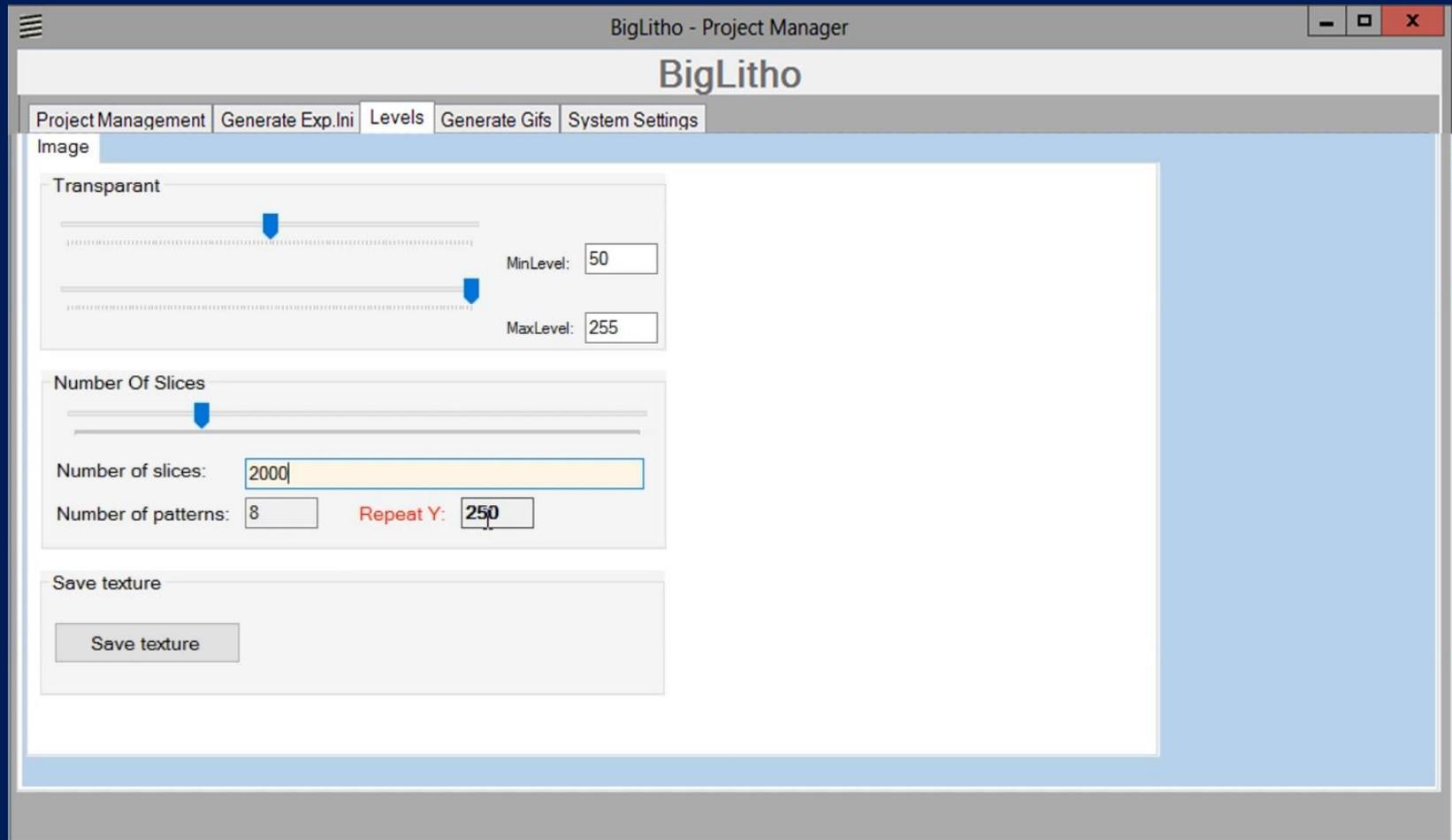
Program interface

The screenshot shows the 'BigLitho - Project Manager' window. The title bar includes standard window controls (minimize, maximize, close) and the text 'BigLitho - Project Manager'. Below the title bar is a menu bar with the following items: 'Project Management', 'Generate Exp.Ini', 'Levels', 'Generate Gifs', and 'System Settings'. The 'Generate Exp.Ini' menu item is currently selected, and its corresponding panel is active. This panel contains several input fields and buttons:

- Frame:**
 - Width, mm:
 - Height, mm:
- Resolution:**
 - Width, px:
 - Height, px:
- Object:**
 - Name:
 - Height, mm:
 - Width, mm:
 - CoX:
 - CoY:
 - Num of Rows:
 - Num of Columns:
- Process Info Update:**
 - Total number of Edges:
 - Number of Edges processed:
 - Buttons:
- Other Buttons:**
 - (located below the Object section)
 - (located at the bottom right of the panel)

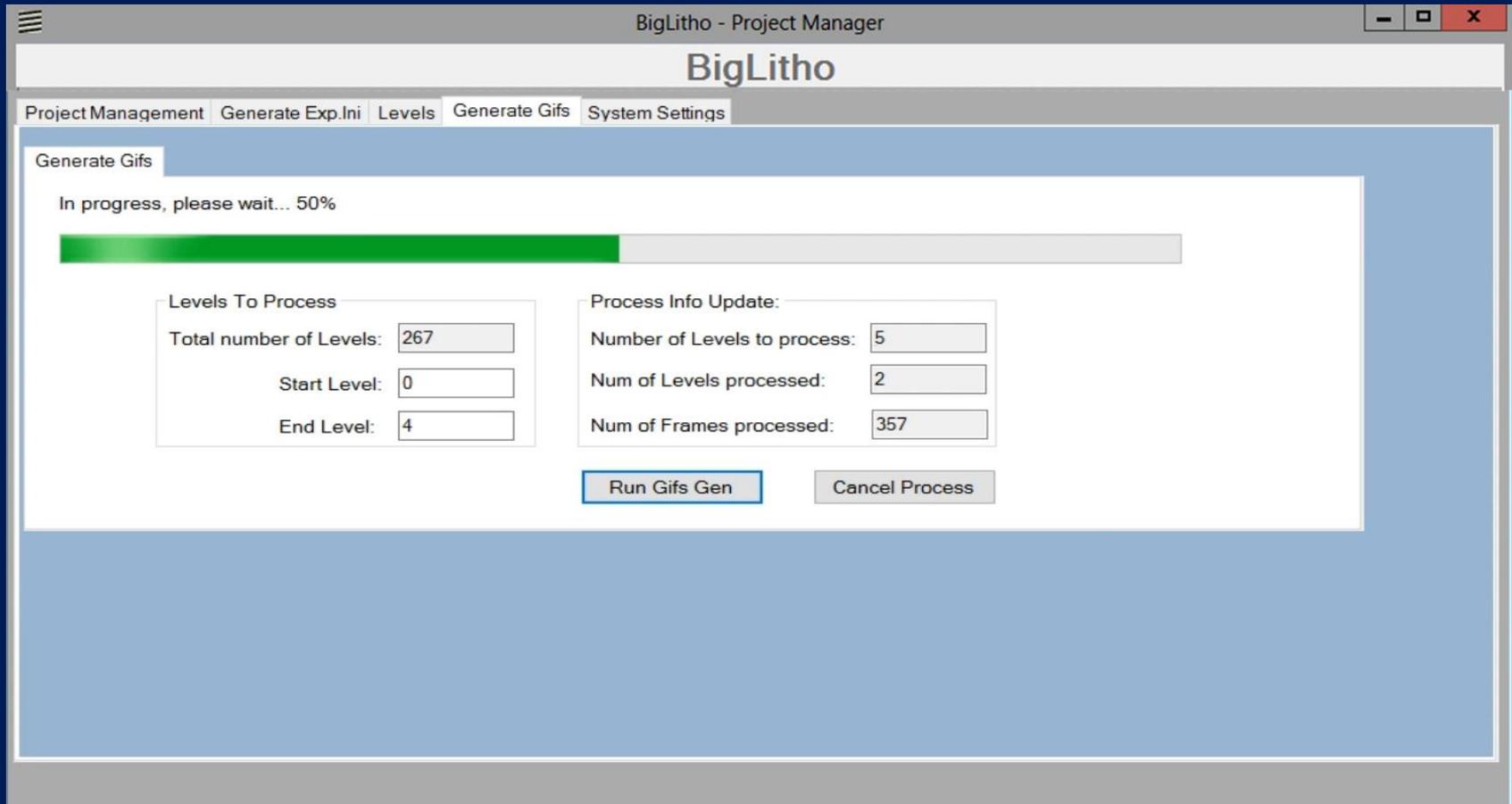
Holographic system parameters setup window

Интерфейс программы



Страница выбора количества слоев (до 50 000 слоев).

Program interface



Frame file creation window

Holograms

