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Program BIGLITHO for preparation of "GRAY HOLOGRAM" of large size 6

***Abstract***

***The program developed by us called BigLitho creates an unlimited number of image files, providing large hologram sizes. A large number of levels of breaking the initial height of the object in our program contributes to the creation of a hologram with a pronounced form of the image surface.***

***Computer holograms of "zero order" have size limitations because of the limited maximum size of raster image files and the number of gray scale gradations on them. So the file size of the gray depth map can not be greater than 30K x 30K pixels and usually has a 16-bit depth of grayscale, which is not enough to create large-size holograms. Computer 3D models can provide high resolution when rendering in 3D editors.***

***The article presents samples up to 8" with a resolution of 1920x1080 pixels. The total number of frame files has exceeded 1 million, which is not possible to do in the usual way. The program can be extended to render the complex distribution of the optical field of volume holograms. This approach can be used for projection matrix systems, electron beam formation systems and 3D holographic printers.***

***Keywords: holography, "zero-order" hologram, large-size hologram, holographic software.***

***References***

1. *Смык А.Ф., Шурыгин А.В.* Асимметричные профили в поверхностно-рельефных голограммах / Мир техники кино. – Москва. –2018-1(12) – C. 23-30.

2. https://dic.academic.ru/dic.nsf/enc\_physics/3486/КИНОФОРМ

3. https://studfiles.net/preview/2378273/

4. *Robert J. Collier, Christoph В. Burckhardt, Lawrence H. Lin (Р. Кольер, К. Беркхарт, Л. Лин)*. Optical Holography. Bell Telephone Laboratories Murray Hill, New Jersey 1971 Academic Press New York and London.

5. https://www.geforce.com/hardware/technology/cuda/technolog