

Abstract for the master's dissertation

In this master's dissertation the formation of images of objects by the phase contrasts method with X-rays and, in particular, the possibility of using a laser-plasma X-ray source are discussed. This paper describes the method of phase contrast, the advantages of a laser-plasma X-ray source over other sources, such as microfocus X-ray tubes, synchrotrons, X-pinch sources. X-ray images of the simple objects were obtained under mathematical modeling in order to elucidate the possibility of using laser-plasma sources for obtaining phase-contrast images and estimating distances for the experimental scheme. X-ray spectra of a target from liquid gallium and solid molybdenum were obtained. The sizes of laser-plasma sources were determined by the knife-edge method, and phase-contrast images of various films were obtained using a crystal LiF detector.