Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Nano and Micro Structures Image Based on Lens-Crystal System For Hard X-Ray Radiation DAVID KUYUMCHYAN, California State University, Northridge, CA 91330, USA, ARMEN KUYUMCHYAN, American NanoScience and Advanced Medical Equipment, INC, CA 91204, USA, VICTOR KOHN, National Research Center "Kurchatov Institute", 123182, Moscow, Russia, ANATOLY SNIGIREV, IRINA SNIGIREVA, European Synchrotron Radiation Facility, B.P. 202, F - 38043 Grenoble, France, EVGENY SHULAKOV, Institute of Microelectronics Technology, RAS, 142432, Chernogolovka, Russia, CALIFORNIA STATE UNIVERSITY, NORTHRIDGE COLLABORATION, AMERICAN NANOSCIENCE AND ADVANCED MEDICAL EQUIPMENT, INC, CA 91204, USA COLLABORATION, NATIONAL RESEARCH CENTER "KURCHATOV INSTITUTE" COLLABORATION, EUROPEAN SYNCHROTRON RADIATION FACILITY, B.P. 202, F - 38043 TEAM, INSTITUTE OF MICROELECTRONICS TECHNOLOGY, RAS, 142432, CHERNOGOLOVKA, RUSSIA COLLABORATION — We present results of imaging properties of the lens-crystal system for hard x-ray radiation. The system is based on a beryllium parabolic refractive lens placed in front of the sample, and an asymmetric silicon single crystal placed behind the sample. We record the magnified x-ray phase contrast image at the x-ray energy 15 keV. The peculiarities of image transformation are investigated both experimentally and theoretically when the focus of refractive lens is moved across and along the optical axis. The computer program was elaborated for a simulation of image formation in the system based on the refractive lens and the crystal with asymmetric Bragg diffraction. The algorithm is based on the FFT procedure.

David Kuyumchyan
California State University, Northridge, CA 91330, USA

Date submitted: 05 Oct 2011 Electronic form version 1.4