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Adaptation of a Commercial Optical CMOS Image Sensor for Direct-Detection Fast X-Ray Imaging.

Marschand L. W. (2), Jiao X. (1), Sprung M. (1), Tieman B. (1), Sandy A. R. (1) and Lurio L. B. (2), (1) The Advanced Photon Source, Argonne National Laboratory, Argonne, IL 60439 USA, (2)Dept. of Physics, Northern Illinois Univ., DeKalb, IL 60115 USA.

We have adapted a commercial CMOS optical image sensor for use as a fast x-ray detector. The sensor was used in a mode where the x-rays impinge directly on the sensor. We will report on a number of characterization measurements: the overall efficiency for absorption of x-rays, the analog-digital-unit response per photon as a function of gain, and the root-mean-square noise in the dark current of the detector. In addition, we will present the first use of the camera for small-angle x-ray scattering and x-ray photon correlation spectroscopy measurements.