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# Macromolecular crystallographic results obtained using a 2K x 2K CCD detector at CHESS

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Results from various macromolecular crystallography experiments are presented showing the effectiveness of a recently intalled 2K x 2K CCD at the Cornell High Energy Synchrotron Source (CHESS). This detector, installed in January 1995, complements the 1K x 1K CCD detector which has been in continuous operation at CHESS since December 1993. The new detector is based on a pixel array composed of 2048 x 2048 pixels which is directly coupled to a Gd2O2S:Tb phosphor by a tapered fiber optic (3:1 taper reduction). The active area of the phosphor has a size of 82 mm on the edge, and the readout time is 7 seconds. The capabilities of the detector will be emphasized by presenting results from various crystallographic measurements including numerous wide-angle oscillation experiments with atomic resolution extending as far as 1 Ångstrom. For 2K images, the pixel size at the active area is 41 microns on the edge leading to approximatley 200 orders of diffraction being resolved across the detector face. In addition to collecting the data in the ordinary 2K mode, we have collected and compared data collected in a binned mode where the pixel size is electronically increased by a factor of 4 in area resulting in smaller data frames and faster readout time, but at the expense of spatial resolu-tion. Dozens of data sets have been collected using this detector. The results indicate that this detector is capable of collecting data of quality equal to that of imaging plates but with much greater beamline efficiency due to the fast readout of the CCD chip.