Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Dark current non-linearities in CCD imagers JUSTIN DUNLAP, ERIK BODEGOM, MORLEY BLOUKE, RALF WIDENHORN, Portland State University — It is generally assumed that the dark count due to thermally excited electrons increases linearly with exposure time. We studied two scientific Charge-Coupled device (CCD) imagers and found that a significant number of pixels have non-linear dark current behavior. Furthermore, we found that non-linear pixels fall into specific categories. In a related experiment we also observed that the dark current response varied as we exposed the imagers to different levels of light. The characterization of the dark current response of a pixel can give additional information about the impurity that is responsible for the increased dark count. This information cannot be obtained by the typical methods of varying the temperature of the chip and analyzing the dark current response. Complications arise for pixels with non-linear dark current, as linear behavior is often assumed in dark current correction.

Justin Dunlap
Portland State University

Date submitted: 08 Dec 2009 Electronic form version 1.4