

## STUDY OF THE TEMPERATURE DEPENDENCE OF THE DARK CURRENTS NON-UNIFORMITY FOR SOME VIDEO-CAMERA CHIPS

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**Rezumat.** Pentru a explica rezultatele experimentale privind neuniformitatea curenților de întuneric corespunzând diferiților pixeli ai chip-ului unei camere video, au fost efectuate: a) studiul numeric al dependențelor de temperatură a curenților de întuneric, pentru a stabili modelul teoretic cel mai simplu care poate descrie suficient de precis rezultatele experimentale, b) evaluarea parametrilor de bază ai pixelilor studiați, corespunzând modelului teoretic ales, c) studiul corelației dintre acești parametri și implicațiile asupra dependenței de temperatură a neuniformității curenților de întuneric pentru diferiți pixeli ai chip-ului studiat.

**Abstract.** In order to explain the experimentally found non-uniformity of the dark currents corresponding to different pixels of a video-camera chip, there were accomplished: a) a numerical study of the temperature dependence of the dark currents, in order to find the most convenient theoretical model which can describe sufficiently accurate the experimental data, b) the evaluation of the basic parameters of the studied pixels, corresponding to the chosen theoretical model, c) the study of the correlation between these parameters and their implications on the temperature dependence of the dark currents non-uniformity for different pixels of the studied chip.

**Keywords:** Video camera, Digital images, CCDs chips, Dark currents non-uniformity

### 1. Introduction

In order to improve the applications in Astronomy [1] of some Charge Coupled Devices, the corresponding dark currents were measured and studied.

Taking into account that:

- a) the merit factor of these photo-sensors is equal to the ratio of the photo- and dark current,
- b) the photo-currents corresponding to some astronomic sources could be very weak,
- c) the existence of some important differences between the emission parameters of the different pixels could influence the image of weak sources,
- d) the existence of some experimental studies of the dark currents non-uniformity in CCDs [2], our study was focused on the:

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