

# τετραφάρμακος: Vegetation, atmosphere and flight parameters monitoring

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## Abstract

Le cansat τετραφάρμακος<sup>1</sup> a été réalisé l'équipe des *Proton-thérapeutes* à l'occasion de la deuxième participation d'une équipe de l'Institut d'Optique *Graduate School* au concours Cansat organisé par Planète-Sciences et le CNES. Ce mini-satellite embarque un module fait-maison permettant de mesurer le taux de végétation au sol. Il remplira en outre la mission de sondage atmosphérique. Lors de sa chute il mesurera certains paramètres de vol. Nous espérons que ces études complémentaires pourraient un jour servir à analyser des chances de vie sur une "Earth-like exoplanet".

a simple beam splitter, and allows to cut infrared for the red detector. Before the hot mirror, we use an objective to form the image on both CCD, for instance we used a simple lens.

## 2.3 Additionnal measurements

We also track the position and the speed of the cansat thank to an accelerometer and a GPS.

## References

## 1 Introduction

## 2 Definition of the missions

### 2.1 Proposed mission : Atmospheric sound-ing

We chose to measure the temperature, the humidity and the pressure during the fall of our cansat thanks to two electronic captors : the BMP085 that measures the temperature and the pressure, and the DHT22 that measures the temperature and the humidity. Measurements are made every two seconds, which is the refreshment rate of the used captors, and the requirement of the mission.

### 2.2 Free mission : chlorophyle detection

In this mission, we detect active chlorophyle by multispectral imagery. We take two images of the same scene, one in a red spectral band, another in a near infrared spectral band. To achieve this we use two CCD behind a hot mirror. The hot mirror transmits most of visible light, and reflects most of infrared. Just like the chlorophyle its reflection and transmission spectrum cuts around  $700nm$ . Just before the CCD, we put filters more selective filters. The use of the hot mirror allows to keep a better part of the flux for both bands than

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<sup>1</sup>prononcez tetrapharmakos