

# ATISE



**ATISE** is the first nanosatellite project made by the CSUG. Its aim is to study polar auroras.

This nanosatellite will contain a camera and three spectrographs. One of the goals of the project is to be engineered by students.



[https://air.imag.fr/index.php/Projets\\_2020-2021](https://air.imag.fr/index.php/Projets_2020-2021)

# ATISE

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## About CSUG:

The CSUG in the Grenoble University Space Centre teaches students of the Grenoble Alpes University and Grenoble INP through project-based learning.

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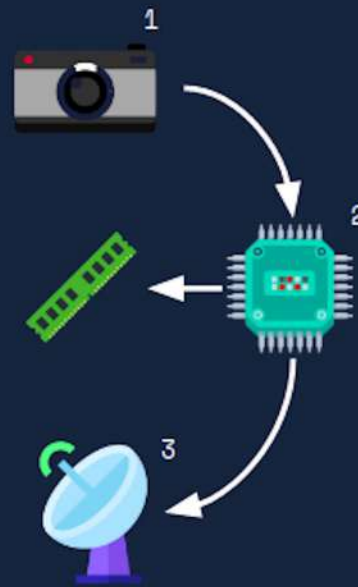
### Context:

ATISE (Aurora Thermosphere Ionosphere Spectrometer Experiment) is the first nanosatellite project created by the CSUG (Grenoble University Space Center). The objective of this satellite will be to study polar auroras from space, and to have a better understanding of the magnetosphere and solar activity. This project is predominantly student-made and it started in 2015 and is set to finish at the end of 2021.



Our objective is to manage the internal communication of the nanosatellite : our partners from the CSUT (Toulouse University Space Center) are developing the image processing component of ATISE, and we have to be sure that processed data is sent correctly to the output of the electronic card, so that it is then sent to Earth by an emitter.

### What is in ATISE?



#### HDPyx (1):

When the nanosatellite is in space, it will include a spectrometer to measure auroral emissions and airglow in the spectral range. As of today, we have the HDPyx component to simulate a spectrometer to give us examples of real data to transmit. We hope to have a real data processing unit made by the CSUT in our final version of the code.

#### Micro-controller (2):

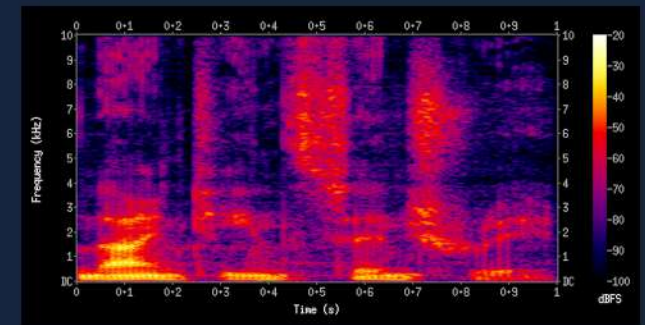
The micro-controller is an ARM Cortex A9. Its role is to get the data from HDPyx, copy it to the internal memory and send it to the "platform" part of the satellite (3), which will send the data to earth.

#### Platform part (3):

The platform part contains the satellite system: guidance, communication. The payload part will communicate with it using UART and the CSP protocol.

### What can we gain from ATISE?

- A project like ATISE will help to promote the use of nano-satellite in the scientific community.
- ATISE can teach student valuable engineering skills by project oriented learning.



*A spectrogram that could be sent by ATISE*