AUSAT
The Aarhus University Satellite Project

Victoria Antoci
STELLAR ASTROPHYSICS CENTRE
Aarhus University

~~AUSAT-1~~

- the proof-of-concept -

AU's first own satellite

Department of Physics and Astronomy
Department of Engineering
Department of Geoscience
GOMSpace

Delphini-1

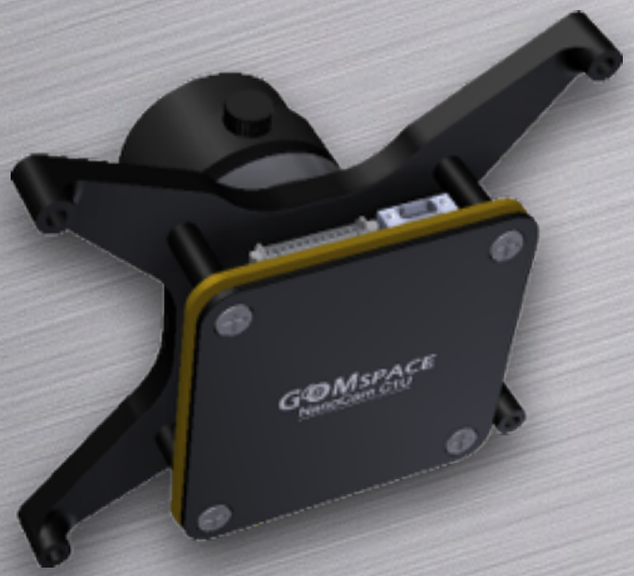
- the proof-of-concept -

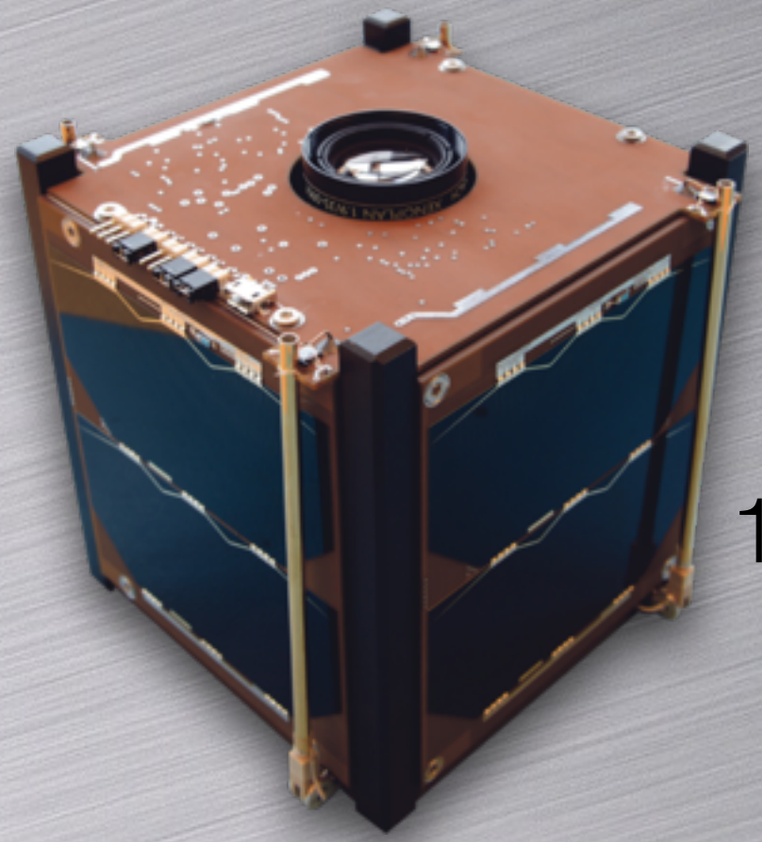
AU's first own satellite

Department of Physics and Astronomy
Department of Engineering
Department of Geoscience
GOMSpace

AARHUS UNIVERSITY
Ministry of Higher Education and Science
esa
AARHUS UNIVERSITETS FORSKNINGSFOND
AARHUS UNIVERSITY RESEARCH FOUNDATION

Delphini-1

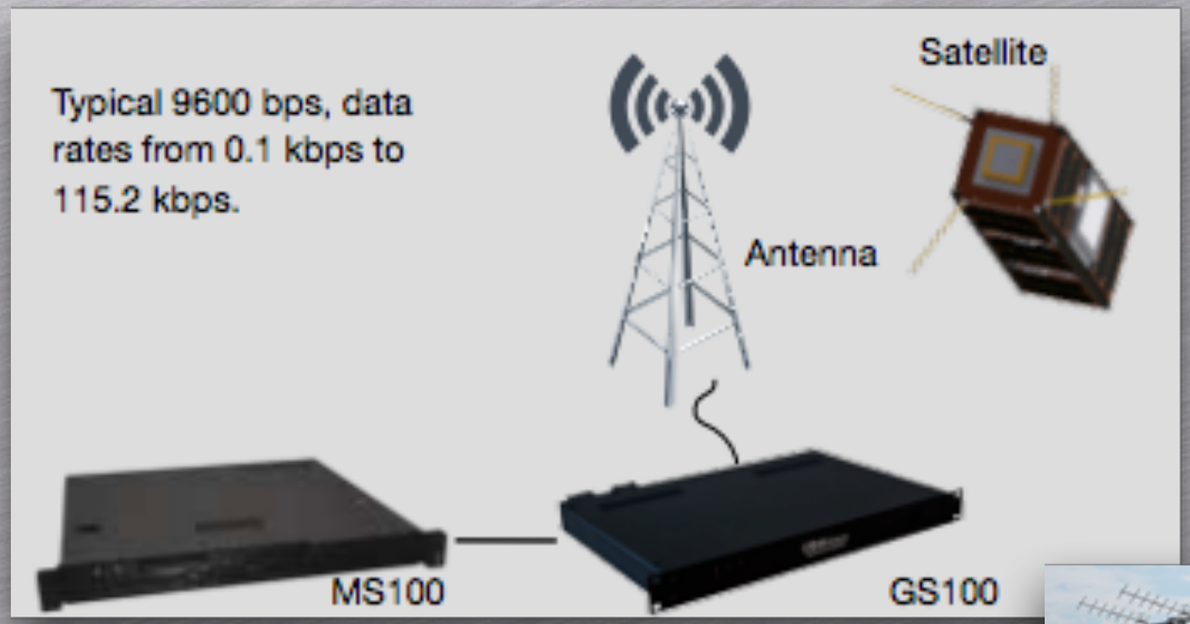




1U

The GomSpace **NanoCam** C1U is a high performing camera-system initially designed for optical Earth Observation projects

Complete UHF Ground Station



GOMSPACE

gomspace.com

Mission Timeline

Application round 2

July 5

Delivery to NanoRacks

Delivery to ISS

March/April 2018

End of Mission

Crash in the atmosphere due to air drag

Aug.-Oct 2017

Oct.-Dec. 2017

4-6 Months

WS1

WS2

Mission

Satellite Integration/ Ground station in DK at IFA and ENG

Software/ Research projects/ Operations

Commissioning & Testing

after launch

Application round 1

Deployment from ISS

March-June 2018

Delphini-1, Software and Satellite Operations
Workshop 2

The aim of the course is to learn to use the Delphini-1 on-board satellite software, to operate the satellite and to program the payload computer. When the course is finished the student is expected to be able to:

- **Use and write software for the Delphini-1 on-board computer with the aim of operating the satellite throughout the mission**
- Plan and execute projects based on the satellite's payload
- **Analyze and simulate data from Delphini-1**
- Search for relevant scientific literature.
- **Evaluate the results and boundary conditions for a specific research project**
- Collaborate in smaller groups with the aim of producing a scientific result
- **Present the results as a small talk at a final workshop day.**

Basic programming skills and basic Linux and C knowledge required.

Delphini-1, Software and Satellite Operations Workshop 2

 # Satellite SW

* Satellite Operations (data up- and download, house keeping,…)
* Payload SW
* Software Development Kit

Basic programming skills and basic Linux and C knowledge required.

Delphini-1, Software and Satellite Operations Workshop 2

 # Hands-on Modules with the aim of developing student projects that can be executed once Delphini-1 is flying

* Data processing

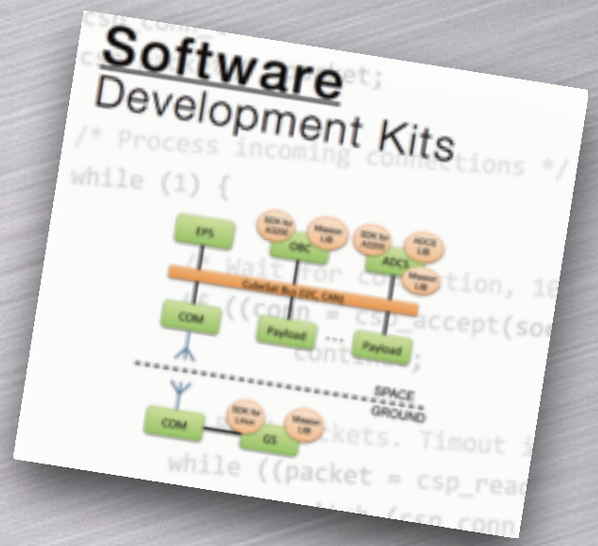
-> general introduction on relevant imaging techniques

-> students will learn how to handle the data downloaded from the NanoCam and develop potential research projects for the payload.

* Infrastructure

-> students will work on embedded programming that resembles the NanoMind A3200 to gain experience in developing programs that could potentially be deployed on a nanosatellite

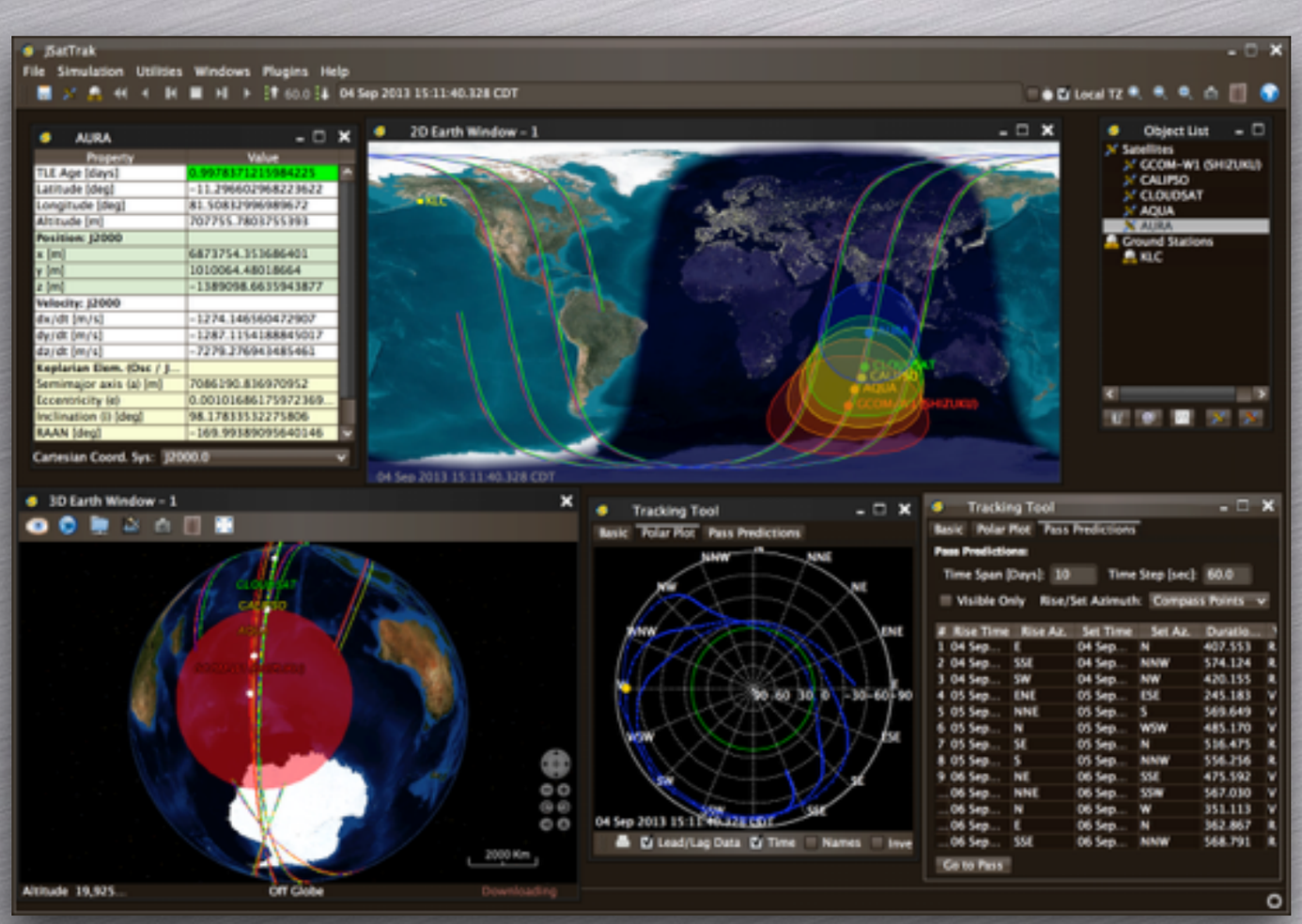
-> students will work on selected aspects of nanosatellite communication



Basic programming skills and basic Linux and C knowledge required.

Delphini-1, Software and Satellite Operations Workshop 2

* Graphical Interface
  -> develop a graphical interface to be used throughout the mission to display all relevant information



Basic programming skills and basic Linux and C knowledge required.

Delphini-1, Software and Satellite Operations Workshop 2

 # Develop your own research project choosing from one of the three modules and give a presentation at the end.

How to apply?

simply go to ausat.au.dk

The Aarhus University nano-satellite project

AUSAT

- Delphini-1 - Aarhus Universitets satellitprojekt
- Delphini-1 - The Aarhus University Satellite Project
  - Time schedules for Delphini-1
  - Applications for Workshop 1
  - Applications for the 'Delphini-1, software and satellite operations' Workshop 2
  - AUSAT - The Project
  - Nanosats and Cubesats

AU › … › AUSAT › Delphini-1 - The Aarhus University Satellite Project › Applications for the 'Delphini-1, software and satellite operations' Workshop 2

Applications for the 'Delphini-1, software and satellite operations' Workshop 2

We need YOU! - Here is how you apply

The application for the 2nd Delphini-1 course, 'Delphini-1, software and satellite operations' is now open.
The deadline is July 5, 2017 at 12:00 p.m.

We take students in their 3rd year of Bachelor's and higher.
In connection with Aarhus University's first Cubesat, Delphini-1, we would like to invite you to be part of the 2nd workshop which will cover satellite operations, satellite and payload software and designing a research project that can be carried out with Delphini-1. With this workshop we will give 25 students from the Departments of Physics and Astronomy, Engineering and Geosciences the opportunity to be part of the Delphini-1 operation team. We expect to start the workshop around week 43. The requirements are basic programming skills with basic Linux and C knowledge.

You have to submit your application on 5 July 2017 at the latest. Mid July at the very latest you will know whether you are part of the team.
Please make sure to send in you application well on time! We accept no late-comers!

We know that this call comes out when most of you already are enrolled in other courses. Don't despair. You have the possibility to change courses according to new AU regulations. You will need to ask for help at the Science and Technology Study Service, though.

This workshop is announced as a course and you can earn 5 ECTS points, but if you like you can also join for fun.

We will have an information meeting on Friday 23 June at 14.00 in the Physics Auditorium.
This workshop is announced as a course and you can earn 5 ECTS points, but if you like you can also join for fun.

If you have any questions regarding your next application email or come and ask Victoria Antoci (antoci@phys.au.dk)
The Application

We will need the following information from you:

Name

Student number

How far are you in your studies: 3rd year Bachelor's/Master's/PhD

Study line

List of university level courses and grades up to now

Short CV

Please write a letter of motivation, max. 1 page elaborating a bit on all the following questions and use between 3-5 sentences for each:

Why do you want to participate in the AU project?

Please indicate which part of the project you are more interested in.

How are you going to use the knowledge you obtain during this project?

How do you courses link to this project?

Describe the project you are most proud of in connection to your studies and mention the 2 courses most relevant for Delphini-1.

If you could decide what type of research (science or engineering) project we should do with Delphini-1, what would it be? (You may want to have a look the satellite and payload description that we link to from the Delphini-1 webpage).

Name:

Student number

How far are you in your studies:

3rd year

How to apply?

simply go to ausat.au.dk

- CV
- List of university level courses and grades up to now
- Letter of motivation, **max. 1 page**:

  # Why do you want to participate in the AU project?

  # Please indicate which part of the project you are more interested in.

  # How are you going to use the knowledge you obtain during this project?

  # How do you courses link to this project?

  # Describe the project you are most proud of in connection to your studies and mention the 2 courses most relevant for Delphini-1.

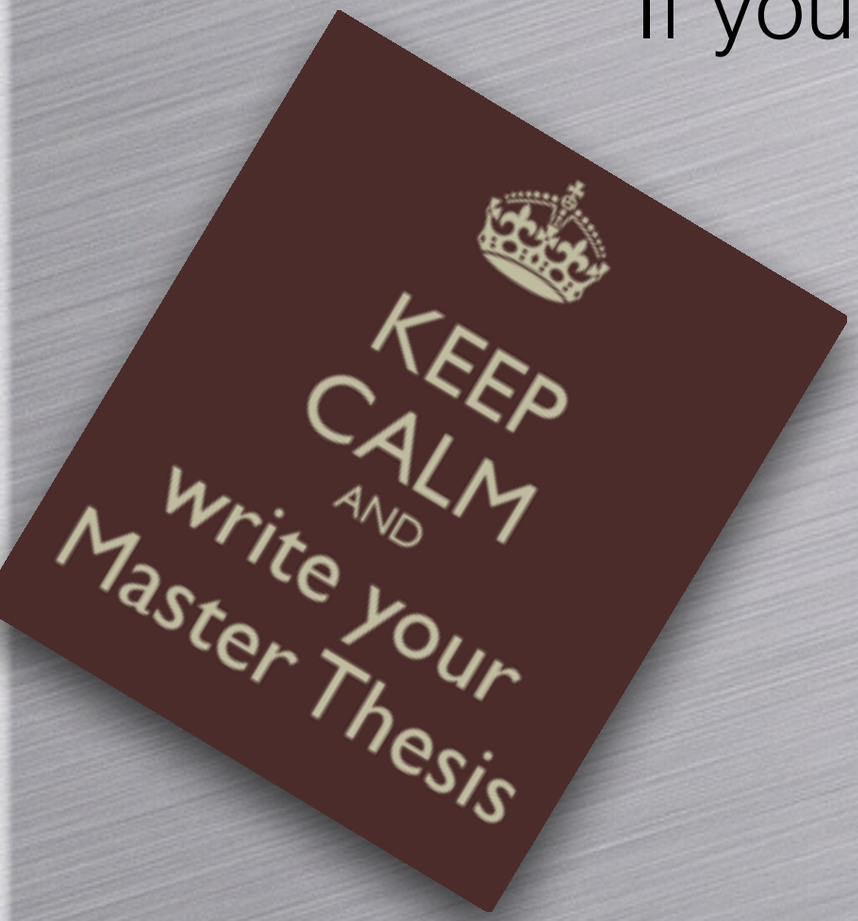
  # If you could decide what type of research (science or engineering) project we should do with Delphini-1, what would it be?

MISSION OPERATION

We want you to operate the satellite!!!

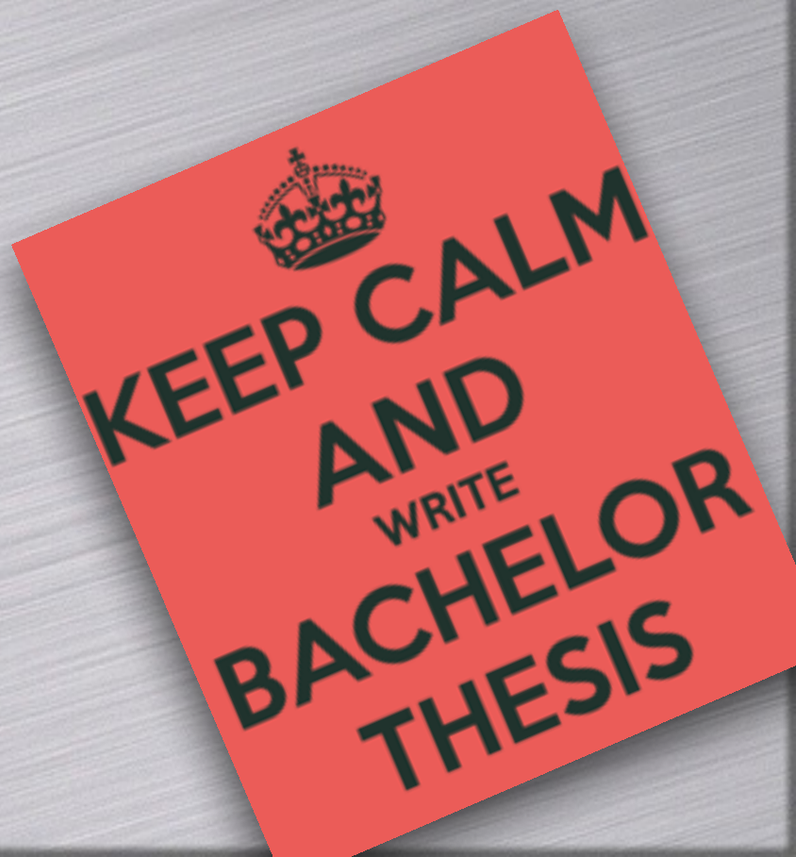
Credit: ESA

If you are interested in doing a



project
bachelor thesis
master thesis

come and talk to me/us!



Department of Physics and Astronomy.
Contacts: Victoria Antoci, Hans Kjeldsen

Department of Engineering.
Contact: Rune H. Jacobsen

Department of Geoscience.
Contacts: Bo Holm Jacobsen, Christoffer Karoff

Students from all three departments can apply for participation in the project.

Basic programming skills and basic Linux and C knowledge required.

Delphini-1, Software and Satellite Operations Workshop 2

Instructor
Staff from GOMSpace, Rune Hylsberg Jacobsen (ENG), Hans Kjeldsen (PHYS), Christoffer Karoff (GEO)

Course coordinator
Victoria Antoci, antoci@phys.au.dk

Academic prerequisites
3rd year of bachelor and higher; basic programming skills and basic Linux and C knowledge required.

Forms of instruction
Lecture, Classroom instruction

Comments on form of instruction
Part of the course will include work in smaller team under supervision.

Exam details: oral

Exam time: 30 minute(s)

Assessment
Passed /failed

Notes
The evaluation will be based on two parts: A small talk and a written report. At the exam the student will present the results of their work as a small talk at a final workshop day.
20 min talk and 10 minutes questions/discussion.