According to Bryce Space & Technology Co., among academic operators, Kyutech is No. 1 in number of small satellites launched

Members of BIRDS -1, -2, -3, -4 and -5, on 30-Oct-2020 in front of the lab building

ISSN 2433-8818

BIRDS Project Newsletter

Issue No. 65
(23 June 2021)

Edited by:
G. Maeda
革新的宇宙利用実証ラボラトリー
Laboratory of Lean Satellite Enterprises and In-Orbit Experiments (**La SEINE**)
Kyushu Institute of Technology (Kyutech)
Kitakyushu, Japan

Archive website: http://birds1.birds-project.com/newsletter.html
All back issues are archived at this website.

Acknowledgment of support: This newsletter is supported, in part, by *JSPS Core-to-Core Program, B. Asia-Africa Science Platforms.*

La SEINE

SEIC Space Engineering International Course

All back issues of this newsletter can be easily downloaded.
Go to here: http://birds1.birds-project.com/newsletter.html and scroll down to the desired issue.

Table of Sections

Continued on the next page

From Trinidad **The Guest Box**

Image credit: https://www.trinigo.com

Maracas Bay is a bay with sandy beach on the island of Trinidad. It is located in the northern section of the island and is the most popular beach in the country due to its beauty and relative ease to visit. It is known as a popular surfing spot with white sandy shores and serene sunset views.

-- Keenan Chatar (PNST, BIRDS-5 member, Trinidad-Tobago)

Table of Sections (cont'd from the previous page)

End of Table of Sections

Ground Station Terminals

Fatima and Pooja hold the boards they have made -- while wearing special T-shirts

Read the latest news on GST – see "GST Column No. 8" in Section 22.

JSPS provides the airfare funds of BIRDS Int'l Workshops and for Ground Station Workshops.

JSPS Reminder

When you publish a paper on a topic related to BIRDS, please include this acknowledgement in the paper:

This work was supported by JSPS Core-to-Core Program, B. Asia-Africa Science Platforms.

01. UNISEC-Global “MIC 7” registration site is now open

Anyone can enter this design contest !

Subject: MIC7 registration site is open!
From: Rei Kawashima <kawashima.rei*gmail.com>
Date: 2021/05/24

To all concerned parties:

We are pleased to inform you that the MIC7 registration site is open.
http://www.spacemic.net/application7.html

Please encourage potential applicants around you to register because we will send reminders to the registrants.
(No need to submit the abstract yet. The deadline is July 7th.)

The final presentation will be held at "Koshiba Hall, " the University of Tokyo. It is the same place where the 7th UNISEC-Global Meeting and 6th Mission Idea Contest were held in 2019. Due to the pandemic, it will be organized in a hybrid way. **(see next page for photos of 2019)**

Please tell the potential applicants to use the materials on the lecture series which would make their work easier. For example, if the applicants want to use the specification of the communication components of the previous deep-space mission with nano/micro satellites, it is available on the presentation slides.

Please feel free to contact the MIC office (CCing) if there is any question.
With warm regards, Rei

Photos from 2019,
by G. Maeda

Winner of ICECUBES category (Costa Rica team)

All MIC-6 finalists are called to the stage

END OF MIC-6 CEREMONY IN 2019

For the full report of 7th UNIGLO Meeting and the 6th MIC (both at Univ. of Tokyo in 2019) see pages 128-167 in Issue #47 of the BIRDS Project Newsletter.

02. Nikkei newspaper writes about Takato Mountain, which is near Kyutech

九州みちくさ帳

品原克幸

2021.5.27

北九州市若松区

高塔山

高塔山は、標高124㍍の低山だ。対岸の戸畑から若戸大橋を渡ると、真正面になだらかな山容を見せている。

若松出身の作家、火野葦平はこの地に伝承されてきた河童をモチーフに、小説「石と釘」を書いた。山頂には、背中に釘の刺さった河童封じ地蔵を祀っている。

展望台に上ると、眼下には洞海湾を跨ぐ若戸大橋と若松、戸畑の街並みが広がり、左に目をやれば林立する風力発電の風車と響灘が飛び込んでくる。この日は大陸からの黄砂飛来で、本当ならばもっと遠くの街や山々が見渡せるのに、薄黄色く霞んで誠に残念だった。

ここからの夜景は「日本夜景遺産」に認定され、ちりばめられた街の明かりを称して、河童の隠した宝石箱ともいわれる。

若松に来たから、若松トマトを買って帰ろう。

日本経済新聞

5月27日

木曜日

発行所 日本経済新聞社
東京本社 ㊞(03)3270-0251
〒100-8066 東京都千代田区大手町1-3-7
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名古屋支社 ㊞(052)243-3311
西部支社 ㊞(092)473-3300
札幌支社 ㊞(011)281-3211

WAKAMATSU WARD of KITAKYUSHU CITY
TAKATO MOUNTAIN

北九州市
CITY OF KITAKYUSHU

For English explanation, see:

https://www.gururich-kitaq.com/en/spot/mount-takato-park

It commands a great view of the Tobata and Wakamatsu area.

Views of (or from) Takato Mountain (124m above sea level)

Takato Mountain 高塔山 （124 m)

Kyutech Tobata Campus

END OF THIS SECTION

Scale

03. Kyutech conducted a webinar for UABC to recruit students for SEIC

Space Engineering International Course

On 28 May 2021 (JST), G. Maeda and Dr Rodrigo Cordova conducted a webinar to recruit students for SEIC. Over 100 students attended this online event. At the right is the promotional poster that UABC created before this event.

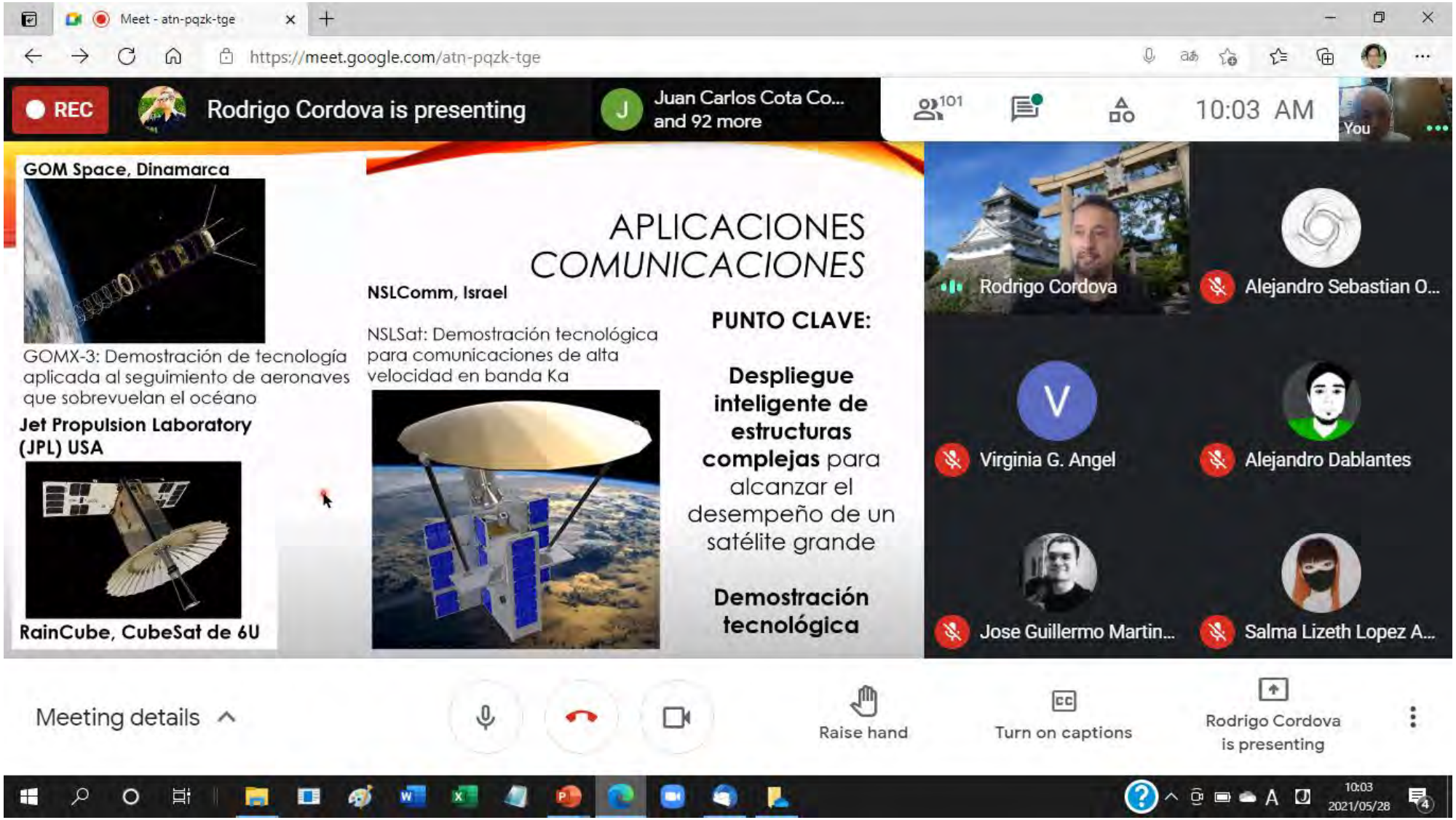
A similar webinar was conducted for El Salvador on 15 May 2021.

Universidad Autónoma de Baja California

Buscar

This is a screen shot taken by G Maeda during the presentation of Dr Rodrigo Cordova.

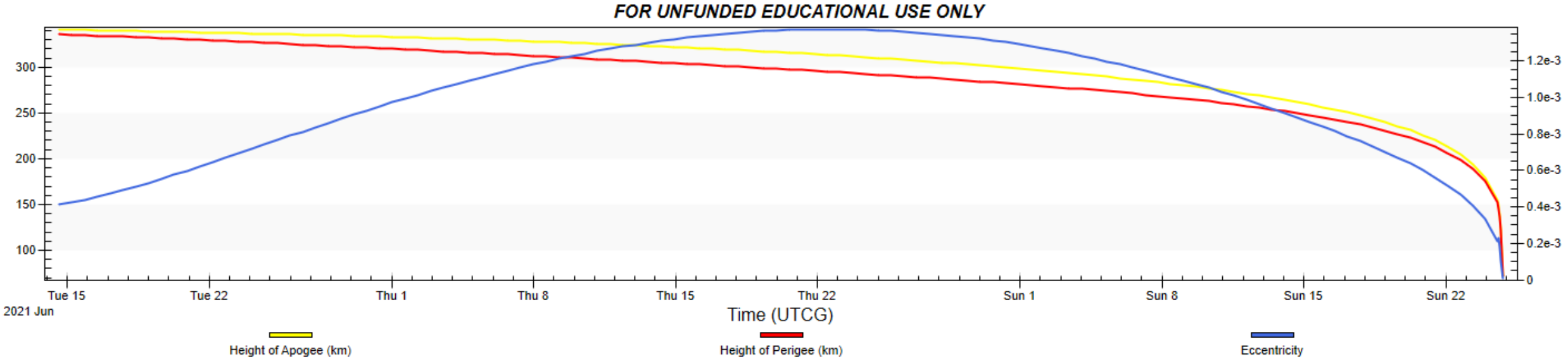
If you would like a webinar conducted for your university, please contact G. Maeda



04. BIRDS-3 satellite updates (de-orbit time is approaching)

-- by Pooja Lepcha (BIRDS-3 project manager, Bhutan), 14 June 2021

Systems Tool Kit (STK) is a multi-physics software application from Analytical Graphics that enables engineers and scientists to perform complex analyses of ground, sea, air and space platforms.
There are many applications of the software, one of the application is determining the orbital lifetime of the satellites using the Lifetime Tool. The Lifetime tool estimates the amount of time a satellite can be expected to remain in orbit before atmospheric drag and other perturbations cause it to decay.
https://help.agi.com/stk/11.0.1/Content/stk/tools-11.htm



The reentry of **NepaliSat-1** satellite is estimated to be on 24th August 2021 after completing 1143 orbits.

For the reentry prediction, the following options are required to be specified:

Cd (Drag Coefficient) – For BIRDS-3 satellites, this value is **2**

Cr (Solar Radiation Pressure Coefficient) – For BIRDS-3 satellites, since most of the area of the satellite is covered with solar cells, this value is taken as **1** (perfectly absorbing).

Drag Area – For BIRDS-3 satellites, at any instant one side of the satellite expériences the drag therefore this value is taken as **0.01m²**

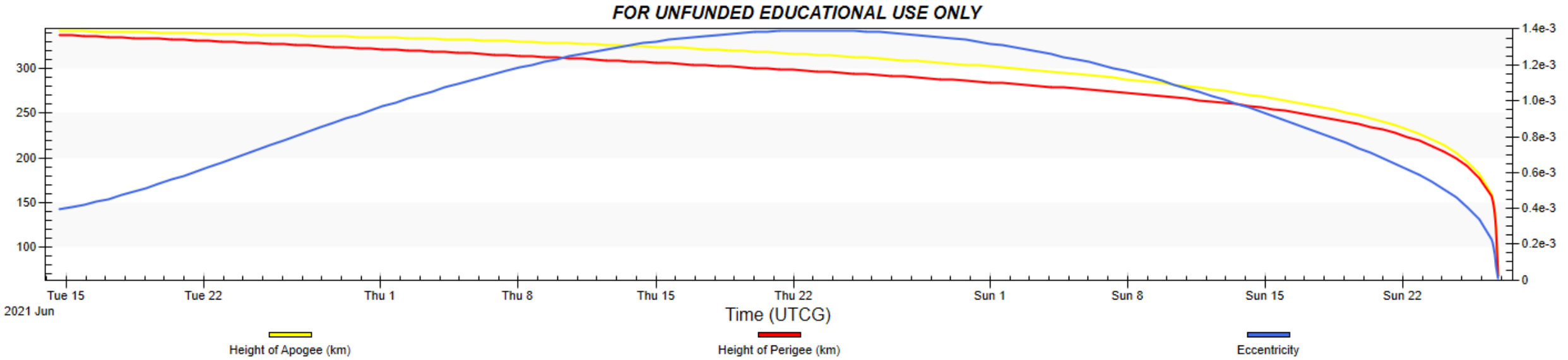
Area exposed to sun – Similar to drag area, one side of the satellite is taken as the area exposed to the sun **(0.01m²)**

Mass – Mass of one BIRDS-3 satellite is **1.13kg**

Solar Flux file – A file containing predicted values of solar flux and geomagnetic activity is available from STK

Atmospheric Density Model – **1976 Standard** was chosen because it is based on satellites altitude range from 86km to 1000km.

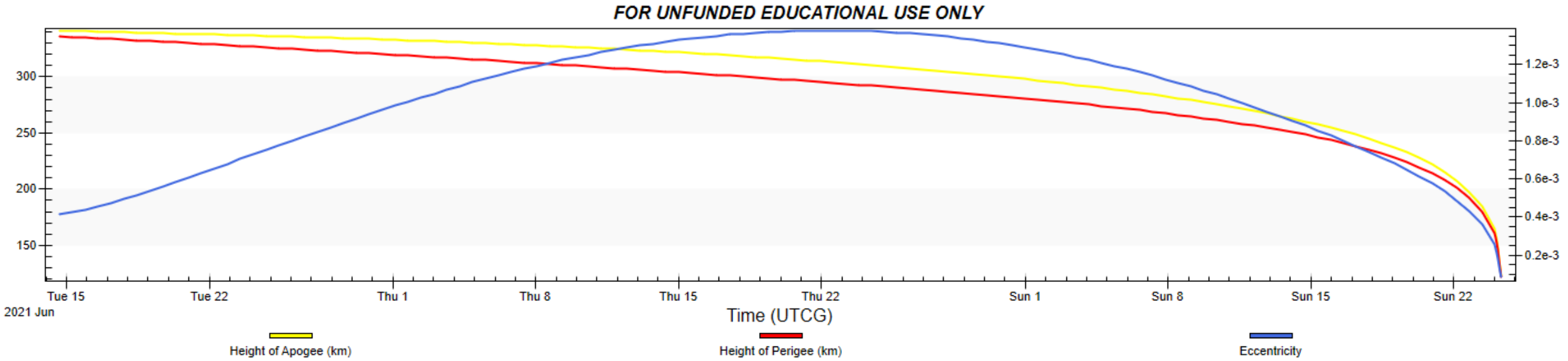
BIRDS-3 Satellite Updates



Using the parameters mentioned in the previous page, the lifetime estimation is computed.

The above figure shows the re-entry prediction of **Uguisu** (Japan) satellite.
The reentry is estimated to be on 26th August 2021 after completing 1174 orbits.

BIRDS-3 Satellite Updates



Similarly, lifetime prediction was computed for Raavana-1 satellite also.

The above figure shows the re-entry prediction of **Raavana-1** (Sri Lanka) satellite. The reentry is estimated to be on 24th August 2021 after completing 1134 orbits.

END OF BIRDS-3 UPDATES

05. Blank

FIUNA FPUNA UNG

CApacity **BU**ilding in **RE**search &

Innovation For **S**pace

The "**CABURE+I 4S**" Project

Newsletter

News from Paraguay
June 2021

Contributors:
Members of
The CABURE+I 4S Project Team

Edited by:
Cristian Coronel and Dr Kurita

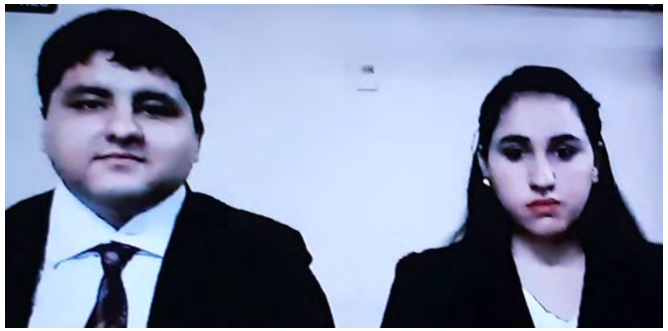
Paraguay Space Agency

The “CABURE+I 4S” Project Newsletter
News from Paraguay

Congratulations to CABURE+I 4S members for finishing their final graduation project.

On April 21 students Cristhian Coronel and Mayra Mosqueda, from the Nihon Gakko University, successfully finished the oral exam and presentation of their graduation project titled “Diseño y Construcción de un Prototipo de Módulo Didáctico para Pruebas de Desarrollo de Nanosatélites” (Design and construction of a Didactic Module prototype for Nanosatellite development tests). The students did an outstanding presentation. Examination members and guests were impressed with the results.

The defense was held virtually, this is, to comply with the sanitary measures of the Nihon Gakko University.



Screen capture of Cristhian and Mayra during the beginning of their online presentation.
They looked nervous!

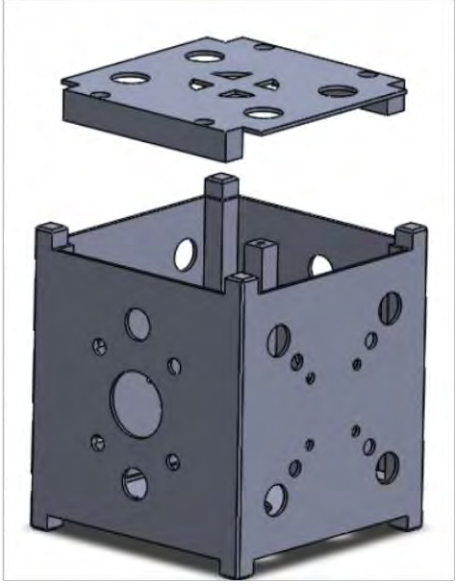
Paraguay Space Agency (AEP) president, Liduvino Vielman, participated as a guest during the event. Here is a snapshot during the student presentation.

Enhanced to show the faces in the picture

We can barely see him here.
He also gave some salutations at the end of the event.

The Didactic CubeSat project

The presented prototype made by the two electromechanical engineering students consist of a low cost implementation of the COTS hardware components available in Paraguay's local market, the students made the prototype with all of the components as is, without any sort of modifications. The students seek to obtain an easy to make and easy to use product.

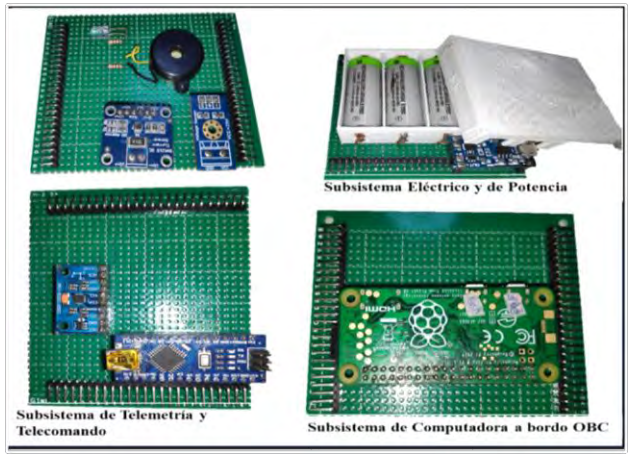


This picture shows the early stages of the 3D model used for the external structure for the prototype.

The structure was made using 3D printing technology.

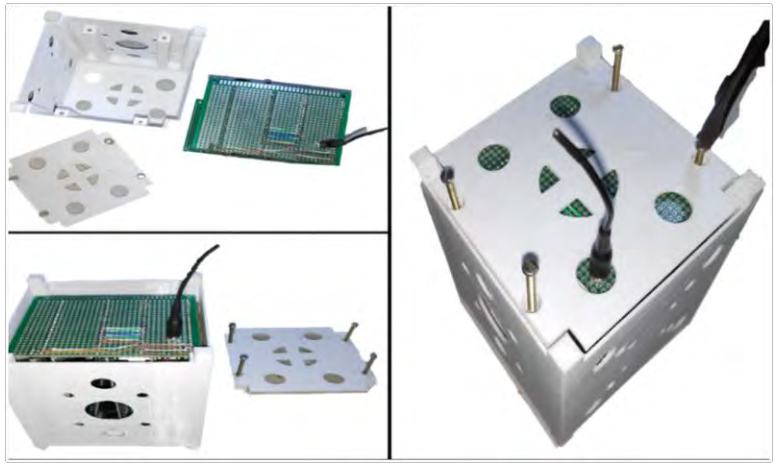
For the implementation of the CubeSat testing and development practices they designed an interactive GUI using MyOpenLab, a Java based graphical programming software.

The Didactic CubeSat project



The main components are a Raspberry Pi Zero W board and an Arduino board which, alongside sensors and batteries where mounted on universal protoboards. This gives the possibility of modification and improvement of the prototype

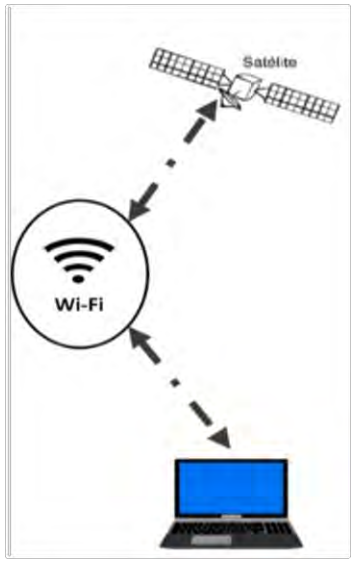
The boards are mounted together using a series of header pins placed in a way to form the cube shape

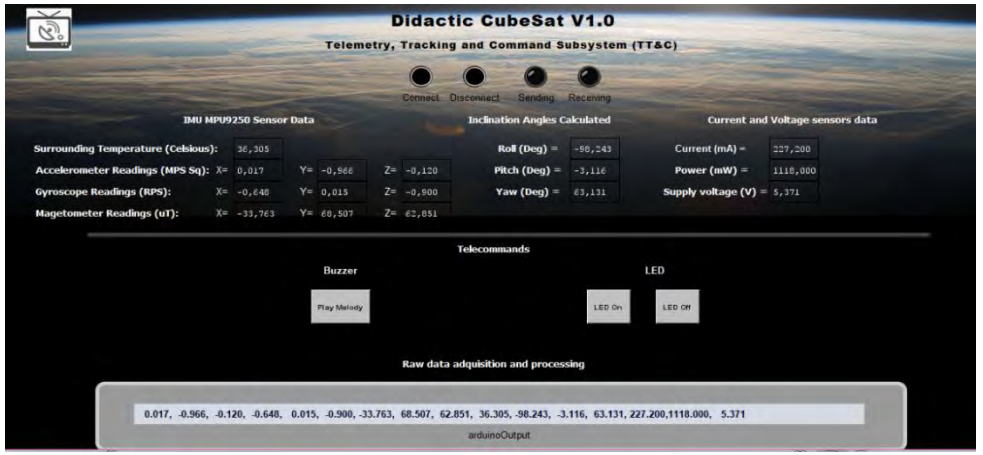


Finally the board assembly is mounted inside the external structure and the CubeSat prototype is then closed and secured with common 3mm screws.
The electric power supply board containing the batteries, has a 3.5mm jack that works as the remove before flight switch. This has to be removed to turn on the prototype.

The Didactic CubeSat project

The prototype also implemented a local network based communication set up. Consists of the use of the wifi capabilities available in the Raspberry Pi Zero W board. The application connects to a server address set on the raspi and gathers all the data collected by the sensors to be shown in a computer that runs as the client. This way the prototype resembles the same basic principle of operations that a CubeSat would perform in space.





The application also allows to perform remote commands such as playing a tone and turning on/off a LED

One of the final thoughts shared by the upcoming new electromechanical engineers was: “We believe that this prototype will help to create more interest in the space science and technology area for future works and help create new research interests to be carried on by the new generations students in Paraguay.”

- Cristhian Coronel and Mayra Mosqueda.

END

07. Kyushu National Museum

The **Kyushu National Museum** (九州国立博物館, Kyūshū Kokuritsu Hakubutsukan) opened on October 16, 2005, in Dazaifu near Fukuoka City—the first new national museum in Japan in over 100 years, and the first to elevate the focus on history over art. The distinct modern impression created by the architectural facade is mirrored in the Museum's use of technological innovations which are put to good in making the museum's collections accessible to the public. For example, the museum's extremely high resolution video system, with the latest image processing and color management software, serves both in documenting the objects in the museum's collection and also in expanding access beyond the limits of a large, but finite exhibition space. *From Wikipedia*

https://en.wikipedia.org/wiki/Kyushu_National_Museum

- 会　期：令和3年7月20日（火）～8月29日（日）
  前期 7月20日～8月9日・後期 8月11日～8月29日
- 休館日：月曜日 ＊ただし、8月9日（月）、8月16日（月）は開館。
  8月10日（火）は休館
- 開館時間：9時30分～17時00分（入館は16時30分まで） *夜間開館の実施状況については、当館ホームページ等でご確認ください。
- 観覧料：一　般 2,000円（1,800円）
  高大生 1,200円（1,000円）
  小中生 800円（600円）

STARTS 20 JULY

Video about "Aesthetic Connections" in Nihongo
https://www.youtube.com/embed/3JjPsKqX90Q

8-minute YT video about this museum in English
https://www.youtube.com/watch?v=5f2rEdYVsL0

From Nishitetsu Fukuoka (Tenjin) station

*If travelling from Omuta station, take the Nishitetsu Tenjin-Omuta line (bound for Tenjin) and transfer at Nishitetsu Futsukaichi station.

Using the Nishitetsu trains

Approx. 35 min from Nishitetsu Fukuoka (Tenjin) station (410 yen)

Nishitetsu Fukuoka (Tenjin) station — Nishitetsu Tenjin-Omuta Line

16 min (Limited express)

*2 limited express trains per hour available on weekdays and weekends, including public holidays.
*Express trains take approximately 18 minutes (no additional fees for limited express or express trains).

Nishitetsu Futsukaichi station Transfer — Nishitetsu Dazaifu Line

Approx. 5 min

* 4~5 trains per hour available for trains travelling to Dazaifu.

Dazaifu station

Approx. 10 min walk

HOW TO GET TO THE MUSEUM FROM TENJIN, FUKUOKA CITY:

https://www.kyuhaku.jp/en/visit/visit_map.html

END OF THIS SECTION

08. 3-min. Nihongo video to showcase FSSC (Foreign Student Sports Circle)

Check out this 3-min. video in Nihongo by Fahd:
https://www.youtube.com/watch?v=fzAvK4uYl_I

日本人の参加も歓迎です。

09. Kyutech and the international CIBER-2 Project

国立大学法人
九州工業大学

ENHANCED BY Google

Language

文字サイズの変更 標準

入学希望の方へ | 在学生の方へ | 卒業生の方へ | 企業の方へ | 地域・一般の方へ

大学案内 | 学部・大学院等 | 図書館・センター等 | 教育・学生生活 | 就職・進路 | 研究・産学連携 | 国際・地域交流 | 入試

九州工業大学 > TOPICS > プレスリリース > 宇宙で最初に生まれた星々の...

学長室より
工学部
情報工学部
生命体工学研究科
教養教育院
MSSC（海外拠点）

宇宙で最初に生まれた星々の発見に挑戦-NASAのロケット使い 宇宙赤外線背景放射を観測-

更新日:2021.06.08

宇宙で最初に生まれた星々の発見に挑戦

— NASAのロケット使い 宇宙赤外線背景放射を観測 —

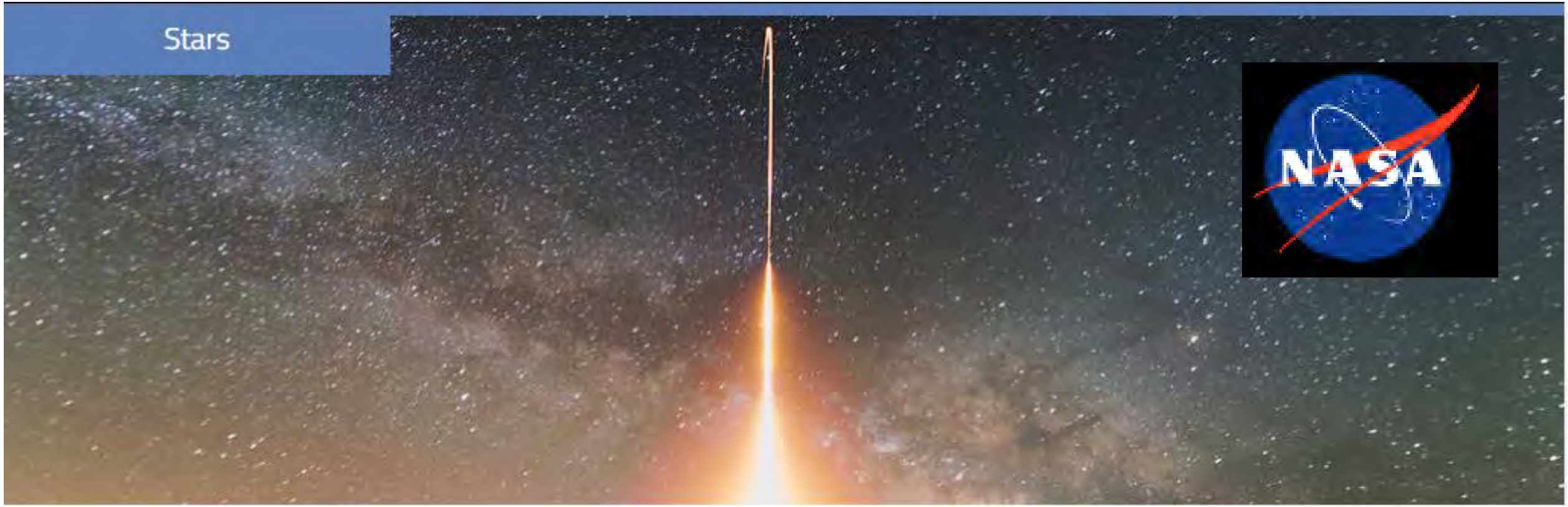
関西学院大学理学部の松浦周二教授(赤外線天文学)の研究室と九州工業大学、東京都市大学、宇宙航空研究開発機構(JAXA)などでつくる国際研究グループは、米国のホワイトサンズ・ミサイル実験場(ニューメキシコ州)から2021年6月7日0時25分(米国山岳部標準時)に打ち上げられた米国航空宇宙局(NASA)のロケットで、初期の天体の解明を目指した観測実験を行いました。2009年から2013年まで計4回の打ち上げで進めたロケット観測実験CIBER(Cosmic Infrared Background ExpeRiment)の成果をふまえた実験で、プロジェクト名は「CIBER-2」。地上の望遠鏡では捉えられない遠くの星について、星々から出る赤外線を合わせた「宇宙赤外線背景放射」の観測から、宇宙で最初に生まれた星や原始ブラックホールなどの宇宙初期天体を調べようとい

Source: https://www.kyutech.ac.jp/whats-new/press/entry-8310.html

Good news from the CIBER-2 Project.

Kyutech is involved in this international astronomy research effort.

See NASA's report on the next page.



Rocket Team to Discern if Our Star Count Should Go Way Up

UPDATE June 7, 2021: The *Cosmic Infrared Background Experiment-2* or **CIBER-2** was successfully launched on a NASA Black Brant IX sounding rocket [shown above] at 2:25 a.m. EDT from the White Sands Missile Range in New Mexico. Preliminary indications show that the intended targets were viewed by the payload and good data was received. The payload flew to an apogee of about 193 miles before descending by parachute for recovery.

READ THE ENTIRE ARTICLE: https://www.nasa.gov/feature/goddard/2021/rocket-team-to-discern-if-our-star-count-should-go-way-up

10. Self-intro by Jeje Kudakwashe (incoming PNST student from Zimbabwe)

10 June 2021

FROM ZIMBABWE

САМАРСКИЙ УНИВЕРСИТЕТ
SAMARA UNIVERSITY

ZIMBABWE NATIONAL GEOSPATIAL AND SPACE AGENCY
ZINGSA

Name: Kudakwashe (translated to God's will) Jeje
Age: 27
Education: Graduate Aeronautical Engineering from Samara National Research; University in Russia.
Experience: Space Engineer at Zimbabwe National Geospatial and Space Agency (ZINGSA)

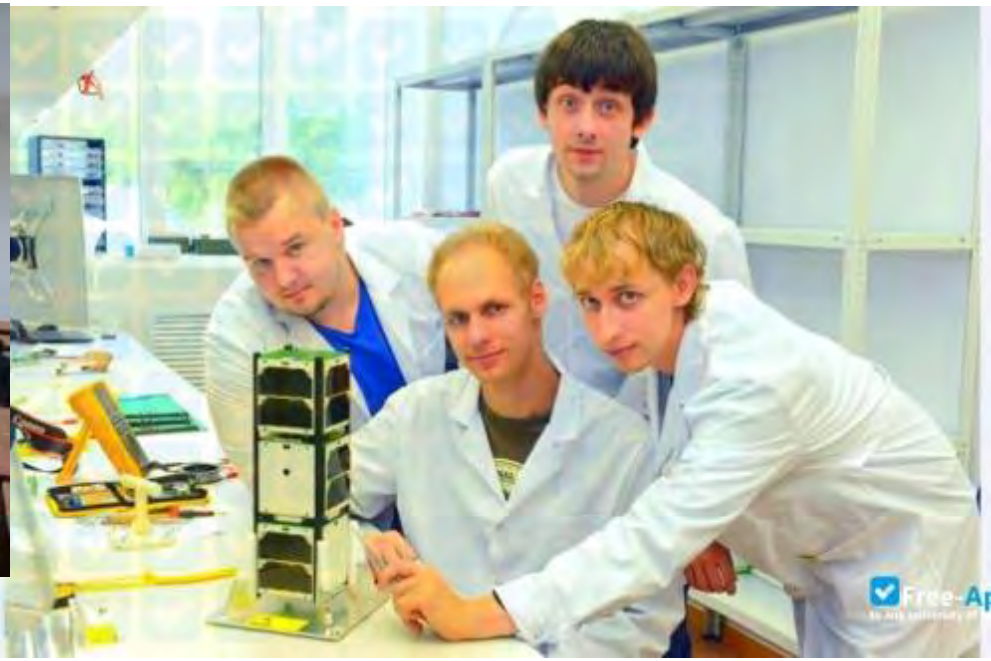
I will be starting my master's degree in Electrical and Space Systems Engineering at Kyushu Institute of Technology in September. I have always been interested in researching about space as there are so many possibilities in space. I was dumbstruck on hearing about my success and being chosen as a final candidate for the Post-graduate study on Nano-Satellite Technologies (PNST). The thought of moving half way across the world reminds me of the time I spent in Russia. I cannot wait to learn and experience the Japanese language and culture and mostly how to build the future of Zimbabwean Satellites.

Student activities at Samara University

Department of Aircraft designing and construction at Samara (*The department I graduated from*)

Classroom in Samara University

https://smapse.com/samara-state-university-samara-state-university/



CubeSat projects at Samara university

https://www.topuniversities.com/universities/samara-national-research-university-samara-university

Educational Background

Aircraft designing lab in Samara University

Aircraft engineer in the engine faculty in Samara University

The Food in Russia

Borscht

Akroshka

Cutlets
Salads
Fish eggs
Shawarma

In Russia I learnt how to speak Russian and I am looking to forward to learn Japanese, for now I only know **Arigato gozaimasu- thank you**

Site seeing – the Orthodox temples in Russia

Sight Seeing in Russia

Space Museum in Samara Russia

Sites near Kyutech I Intend to visit …

- Kokura castle
- Shimonoseki
- Mojiko
- Mt Sarakura

Kudakwashe at the Amateur Radio License Course

Current Activities

Upon completion of my studies I came to Zimbabwe and now I am working as a Space Engineer at the Zimbabwe National Geospatial and Space Agency (ZINGSA). I am currently conducting my Armature Radio License Course and having this license will facilitate me to contribute on ground station operations at ZINGSA also when I join Kyutech, I look forward in operating other satellites.

At Kyutech I will be in this program:

End of this section

11. Australian Space Discovery Centre in Adelaide, Australia

https://www.industry.gov.au/australian-space-discovery-centre

This innovative "space outreach facility" was opened on 31 March 2021 in Adelaide, Australia.

All the material in this section was provided by the Australian Space Discovery Centre in the form of a *Media Pack*.

The following people were the official spokespeople for the opening of the *Australian Space Discovery Centre*

- The Hon. Scott Morrison MP – Prime Minister of Australia
- The Hon. Christian Porter MP – Minister for Industry, Science and Technology
- The Hon. Paul Fletcher MP – Minister for Communications, Urban Infrastructure, Cities and the Arts
- The Hon. Steven Marshall MP – Premier of South Australia
- Mr Enrico Palermo – Head, Australian Space Agency
- Dr Jason Held – CEO, Saber Astronautics

Quotes attributable to the Hon. Scott Morrison MP, Prime Minister of Australia

"The Australian Space Discovery Centre will be the go-to destination for curious minds to learn about the wonders of space and to see themselves as part of Australia's space story," the Prime Minister said.

"But the Discovery Centre isn't just for the young and the young at heart – the cutting-edge Mission Control Centre will enable our local space businesses to track and control their very own missions and satellites, providing critical new capability here on home soil."

Quote attributable to the Hon. Christian Porter MP, Minister for Industry, Science and Technology

"Careers in space aren't all about being an astronaut. From manufacturing, to engineering, space medicine, geology, AI and computing, there are thousands of opportunities being created in this rapidly-growing sector - and we want to inspire the next generation to consider one of these exciting jobs,"

Quote attributable to the Hon Paul Fletcher MP, Minister for Communications, Urban Infrastructure, Cities and the Arts

"The Adelaide City Deal sets out a plan to boost the economic and social vibrancy of Adelaide. The Discovery Centre and Mission Control Centre at Lot Fourteen will be an important part of this plan,"

Quote attributable to the Hon. Steven Marshall MP, Premier of South Australia

"The Federal Government has an ambition to grow the size of the Australian space economy to $12 billion by 2030 and create an additional 20,000 jobs," said the Premier.

"South Australia will lead this charge - and that's a coup for our state. Young South Australians should have stars in their eyes."

Quotes attributable to Mr Enrico Palermo, Head of the Australian Space Agency

"We are establishing infrastructure for critical space flight and engineering capability," Mr Palermo said.

"Companies and researchers at university will be able to utilise the Mission Control Centre for pre-flight testing, launch support, as well as communications during flight."

Quote attributable to Dr Jason Held, CEO of Saber Astronautics

"This mission control centre brings Australia into the 21st century, so all of the new companies that are growing in Australia get a leap ahead capability and a competitive edge in terms of flight safety and mission success"

Background

- The Australian Space Discovery Centre is a brand new, interactive centre in Lot Fourteen in Adelaide.
- It aims to inspire the Australian community and the next generation of the space workforce through stories of opportunity, curiosity and technology.
- It has been developed in partnership between the Australian Space Agency and Questacon – the National Science and Technology Centre

The Discovery Centre will include:

- a space gallery featuring hands-on experiences and information on Australia's growing space sector
- a Careers Hub, which will showcase job opportunities in the local space industry
- information on STEM education options for young people to explore pathways for a future in space
- an operational Mission Control Centre, viewable through a theatrette for live space events, guest speakers and opportunities to engage with space experts

What is in the Australian Space Discovery Centre?

The Australian Space Discovery Centre includes four interconnected areas:

Space Gallery: the Space Gallery celebrates Australia's contemporary work and excellence in the space sector.
Explore Australia's expertise in aerospace and some of our cutting-edge propulsion systems.
Discover the unique challenges and opportunities of operating in space.
Learn about Australia's contributions to the global space industry and how space impacts our everyday life.
Discover how Australia's expertise in remote operations will benefit future human spaceflight.

Careers and Information Hub: The Careers and Information Hub challenges ideas about space careers. It connects visitors with paths to space jobs with a focus on STEM. The hub also covers other space disciplines including art, history, law, and diplomacy. The Careers and Information Hub provides opportunities for self-learning as well as staff-guided discovery.

Mission Control Centre and Theatrette: The Mission Control Theatrette is a multipurpose theatre, looking directly into the Mission Control Centre. Saber Astronautics operates the Mission Control Centre, called the Responsive Space Operations Centre. It provides facilities to control small satellite missions with real-time control and testing.

Endeavour Room: The Endeavour Room is named after the space shuttle Endeavour. The Endeavour took Andy Thomas, an Australian-born astronaut, to space. The Endeavour Room is a place for the space sector to connect with the public. Programs, meetings, video conferences and events can be held in the Endeavour Room.

What is the Mission Control Centre?

The Mission Control Centre (MCC) is located in Adelaide's new innovative Lot Fourteen precinct, adjacent to the Australian Space Discovery Centre.

Operated by Saber Astronautics and branded as part of Saber's Responsive Space Operations Centre (RSOC) program, the new centre offers concurrent design services, pre-flight testing, launch support and live on-orbit operations services for the commercial space sector. Missions conducted from the RSOC in Adelaide are supported by Saber's heritage machine learning capabilities and innovative 3D gaming technologies.

The centre in Adelaide joins Saber's established RSOCs in Colorado, USA and Sydney, Australia for 'follow the sun' operations. The RSOC will support flight operations for commercial and government missions.

Operational information

- The Discovery Centre will open to the public following rigorous testing throughout April.
- Bookings are now open from May, https://www.industry.gov.au/australian-space-discovery-centre/visit
- The Centre will open Wednesday – Sunday 10am-5.15pm.
- At this time, the Discovery Centre will be free to the public with a small fee for school groups and for events.
- The Centre’s target audience is young people, families and school groups.
- An online booking system and check in system will ensure contract tracing, and to fit within the required space.
- Funding for the full project involving the Australian Space Discovery Centre forms part of the Federal Government’s Adelaide City Deal:
  - $6 million for the Australian Space Discovery Centre

Economic impacts

- The work of the Australian Space Discovery Centre will contribute to the Government's goal of tripling the size of Australia's space sector and creating up to another 20,000 jobs by 2030.
- It also closely aligns with the fourth strategic pillar in the Government's Australian Civil Space Strategy: inspiring and improving the lives of all Australians.
- In the 2018-2019 financial year, the Australian space sector generated $4.56 billion in revenue, which is a 5.8 per cent increase from 2016-2017.
- In the same year, the Australian space sector had a headcount of 11,500 workers, which is a 10.8 per cent increase from 10,400 over previous.
- Importantly, the Australian Space Discovery Centre's program will highlight how space is part of improving our everyday lives and solves problems to make our lives on Earth safer – like helping us find our way on Google maps, planning and responding to bushfires, and supporting defence and national security.

END OF THIS SECTION

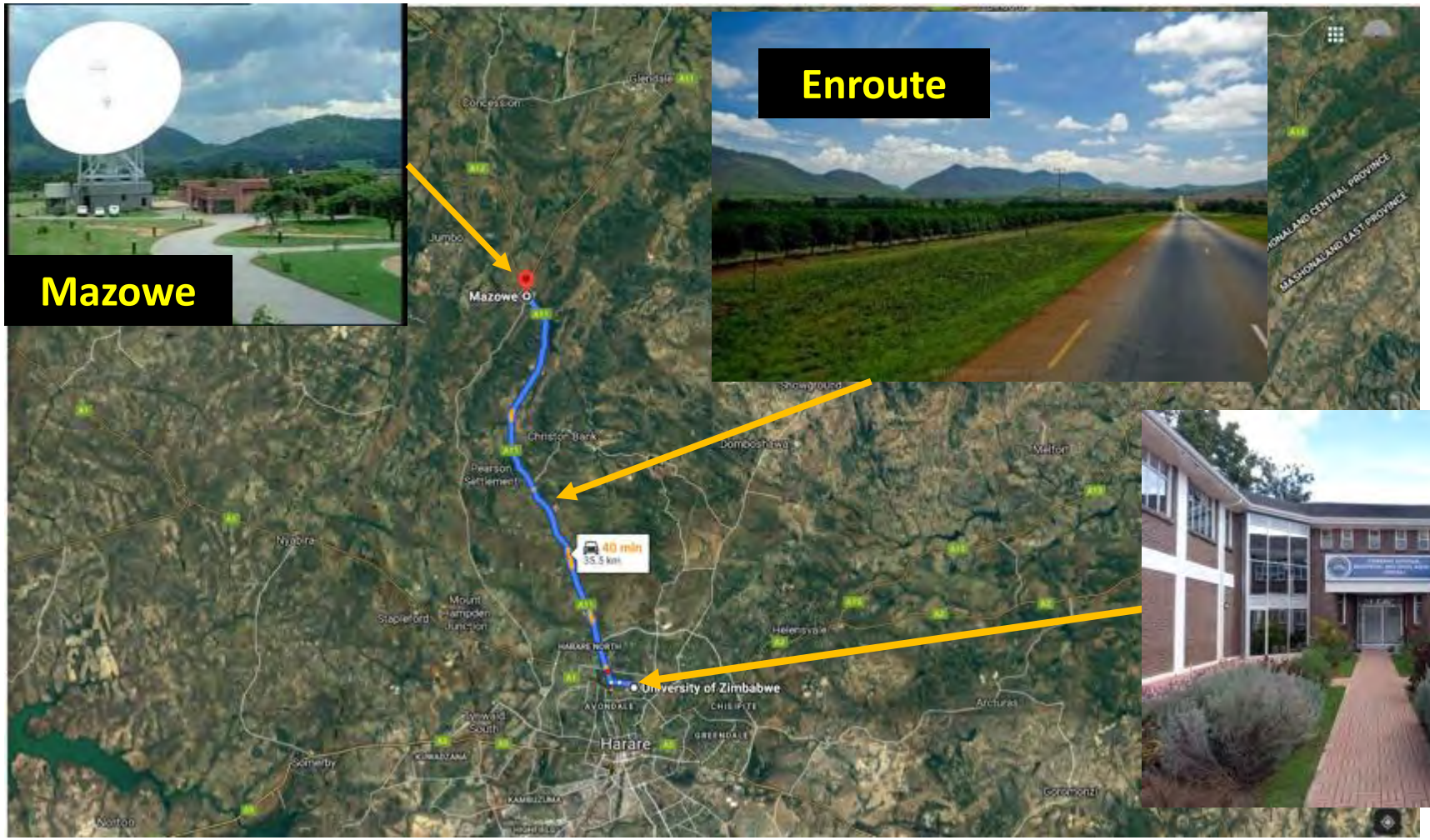
ZIMBABWE NATIONAL GEOSPATIAL AND SPACE AGENCY GROUND STATION RF TEST

Article by:
MARIE ANN
ZINGSA OUTREACH OFFICER ,
10 June 2021

Mazowe Ground Station Radio Frequency Feasibility Test

- ZINGSA is in building ZIMSAT-1 along with other projects, the ZINGSA engineers conducted ground station RF Feasibility Test in order to see if the site is suitable for ZIMSAT-1 operations.
- The RF test was successful thus the operation is proceeding as scheduled.

THE 40-MINUTE DRIVE FROM ZINGSA TO MAZOWE GROUND STATION



ZIMBABWE GROUND STATION RF TEST

a

b

c

Space operations and launch services engineers conducting an RF-Test on ground station site at the designated antenna deployment site.

(a) The Spectrum Mobile Monitoring System loaded with equipment fo RF test.
(b) Set up for spectrum analysis using Antennas
(c) Engineers pose behind the Spectrum Mobile Monitoring System

ZINGSA MAZOWE GROUND STATION

View of the mountain from the top of the earth station station

Mountains around the ground control station area

Sites Around Mazowe Earth Station

Mazowe Hotel

Pamushana Guest lodge

https://twitter.com/pamafrigroup/status/1305144864229806082

Mazowe Dam leisure area

https://www.pinterest.com.au/pin/536421005615041342/

Mazowe orange crush from Mazowe citrus farms

END OF THIS SECTION

13. Report from Zimbabwe: Amateur radio licensing course

Article by:
MARIE ANN
ZINGSA OUTREACH OFFICER ,
10 June 2021

ZINGSA AMATEUR RADIO LICENSING (ARL) COURSE

- ZINGSA is currently training its personnel for satellite operations to meet the ZIMSAt-1 launch and for this ZINGSA trained 15 engineers from various departments.
- The training is still in progress and being done locally.
- Space engineers, Space scientists and Space operations and launch engineers are being trained.

ENGINEERS' AMATEUR RADIO LICENSING (ARL) COURSE

A total of 15 engineers at ZINGSA are already training for ARL. These are from both the Space Engineering and SpaceOps Department.

Enjoying Lunch after one of the training sessions

ZINGSA engineers having an online mock exam

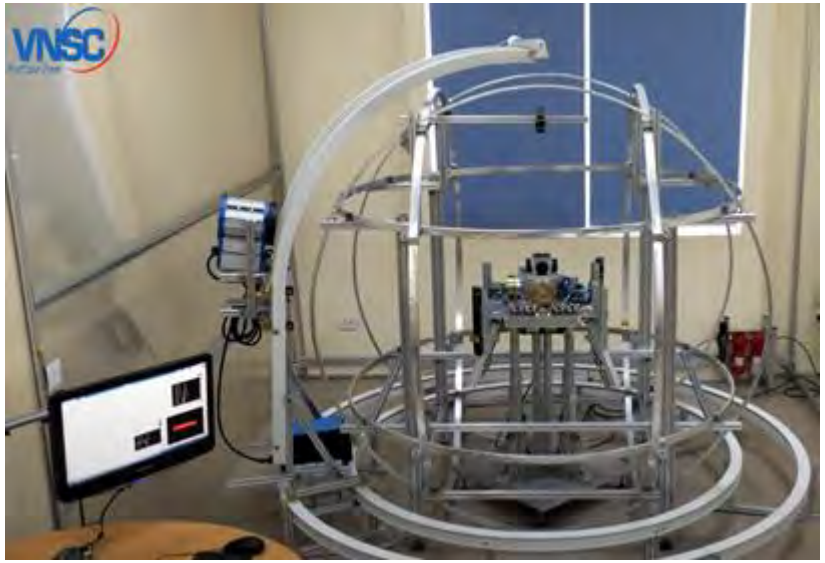
Amateur Radio License Course

- Some ZINGSA engineers and the TelOne instructors pose for photos during a break time

END OF THIS SECTION

14. ADCS simulator that was built at VNSC

Vietnam Academy of Science and Technology
VIETNAM NATIONAL SPACE CENTER
VIETNAM NATIONAL SPACE CENTER



This article was written by PHAM Anh Minh <pham.minh-anh443(at)mail.kyutech.jp> and submitted to BPN on 9 June 2021.

He is a PNST fellow and is pursuing a Phd here at SEIC. After graduation, he will return to VNSC, where he is employed as an engineer. He received his masters degree at Keio University.

This article describes in brief a system simulator that was designed and built at VNSC. The simulator verifies the design of a ADCS (Attitude Determination and Control System) of a small satellite.

Vu Viet Phuong
(ADCS Simulator Project Leader)

Dynamics Team
- Le Xuan Huy
- Phan Hoai Thu
- Trinh Hoang Quan
- Nguyen Minh Quan
- Pham Anh Minh
- Hoang The Huynh

Electronic Team
- Nguyen Van Thuc
- Nguyen Son Duong
- Nguyen Tien Su
- Nguyen Minh Thao
- Ngo Thanh Cong
- Pham Kim Cuong

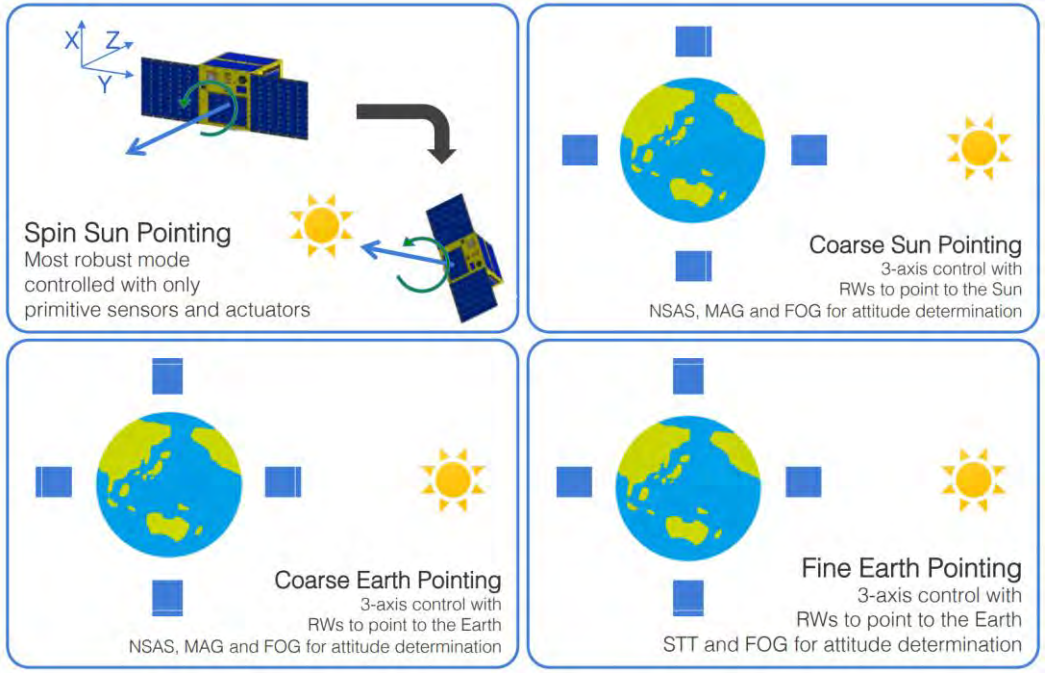
Structure team
- Truong Xuan Hung
- Bui Nam Duong
- Nguyen Duc Minh
- Tang Quang Minh
- Trinh Thang Long
- Tran Cong Duong

ADCS Simulator of VNSC

ADCS design

- Consider the requirements of the mission
- Consider the operation scenario.
- Etc.

How can we verify ADCS design?



Model In the Loop Simulation
- Only simulation computer is used

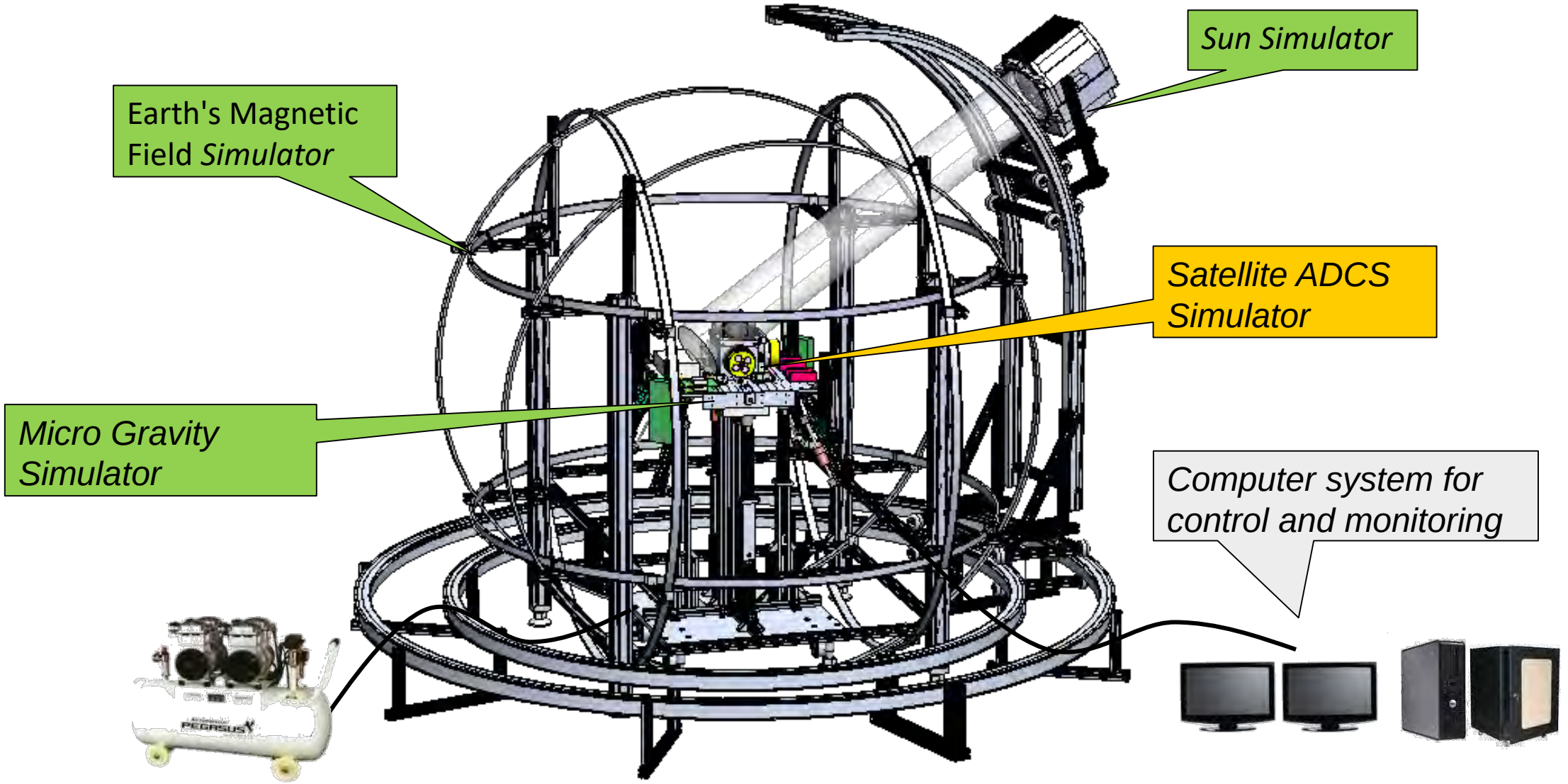
Software In the Loop Simulation
- Only simulation Computer is used

Processor In the Loop Simulation
- Simulation and flight computer is used

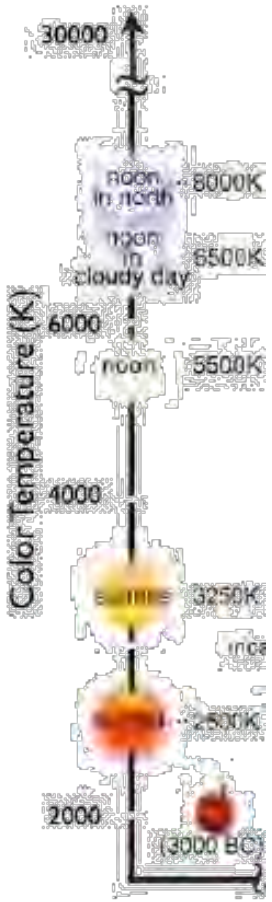
Hardware In the Loop Simulation
- All ADCS hardware is used

Attitude Determination and Control System Simulator (ADCSS) is the system to do hardware in the loop simulator

The Overall System



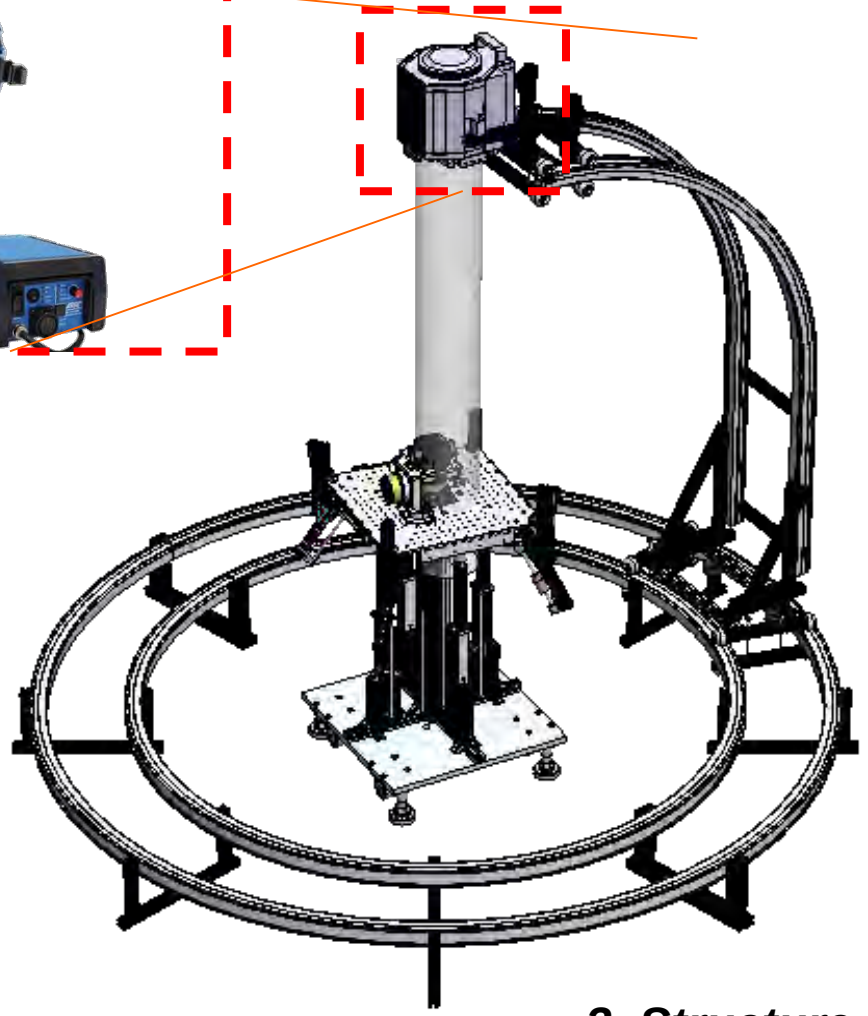
Sun Simulator



3. Source of Light HMI

- Power: 575 W

- Color Temperature : ~5500K



Almanac Algorithm

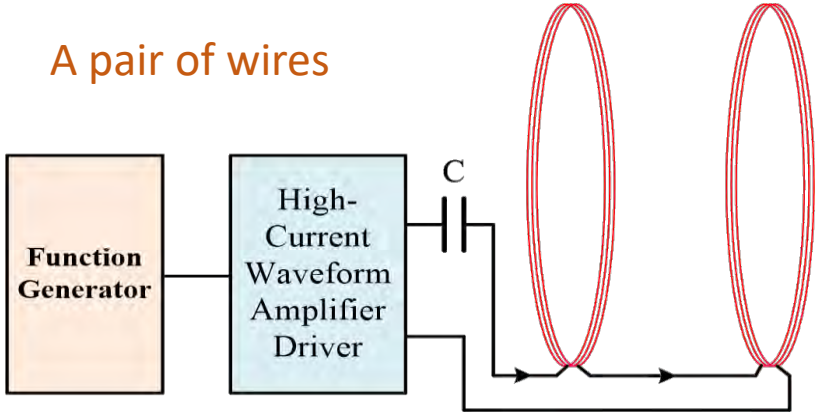
1. Control and Monitoring Computer

2. Structure System

System Specification
- Illuminance 45.000 lx.
- Control Accuracy: 2º

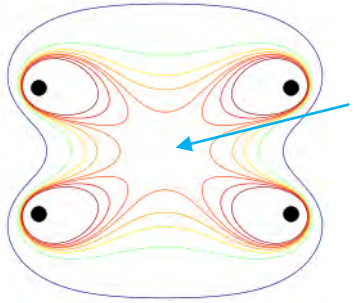
Earth's Magnetic Field Simulator

A pair of wires



Generate

Homogeneous in one axis



The field where the magnetic field is homogeneous

Cross section

Three pair of wires

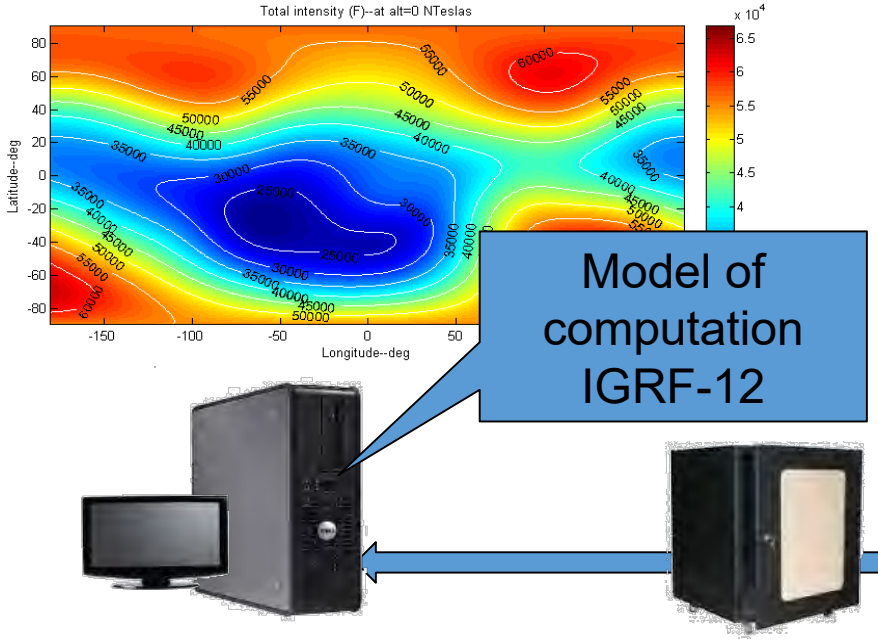
Generate

A controllable homogeneous magnetic Field

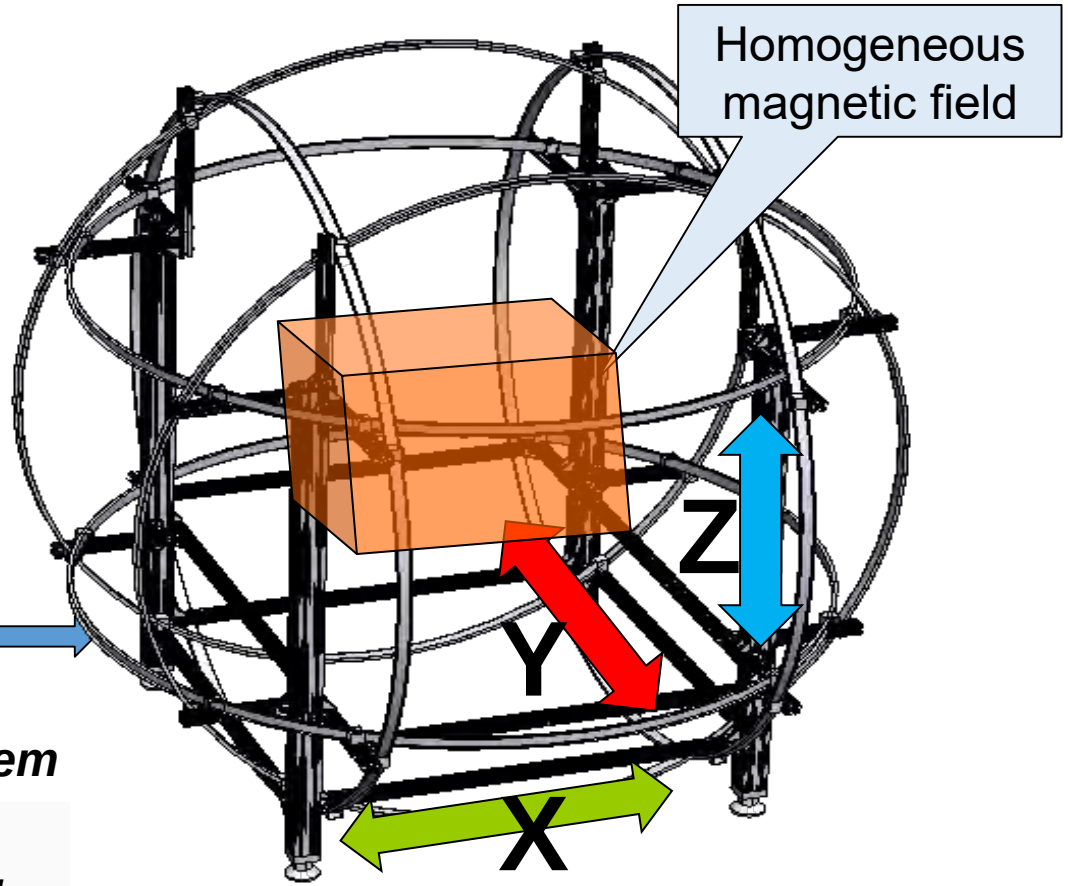
Apply

- Remove the Earth's Magnetic field
- Generate the required magnetic field depended on the position the satellite

Earth's Magnetic Field Simulator



1. Computing and Monitoring System



3. Three pairs of wires
(Helmholtz principle)

Requirement:

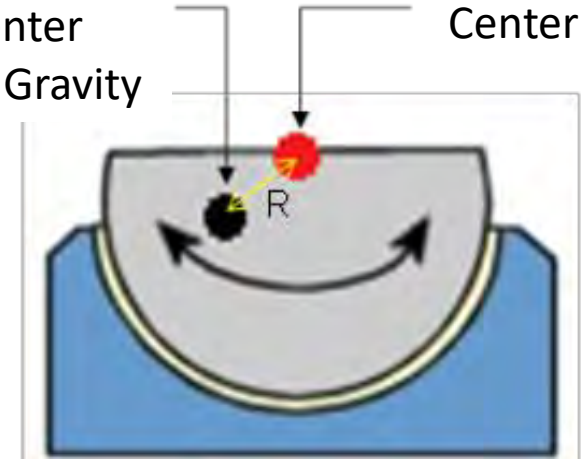
- *3-Axis magnetic field can be controlled the magnitude.*
- *Model of computation IGRF-12.*
- *Strength of magnetic field up to 50.000 nT.*
- *Accuracy: 5%.*

Micro Gravity Simulator

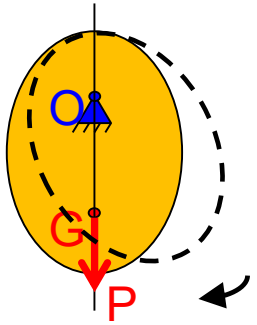
Principle

1. No Gravity → - Air-bearing system

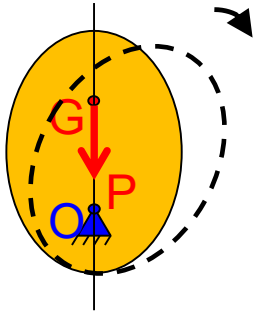
2. No Friction → - Center of Gravity and Center of Rotation



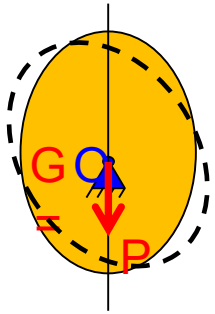
Mechanical equilibrium principle



Stable equilibrium
(Center of gravity is under center of rotation)

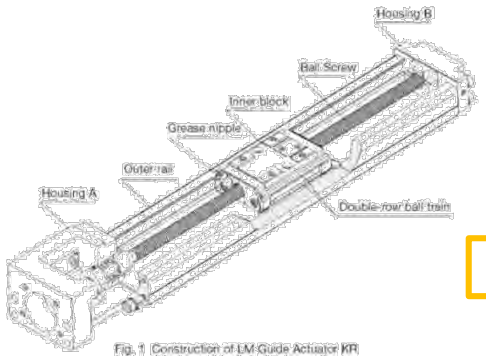


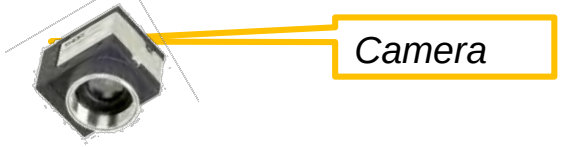
Unstable equilibrium
(Center of gravity is behind center of rotation)

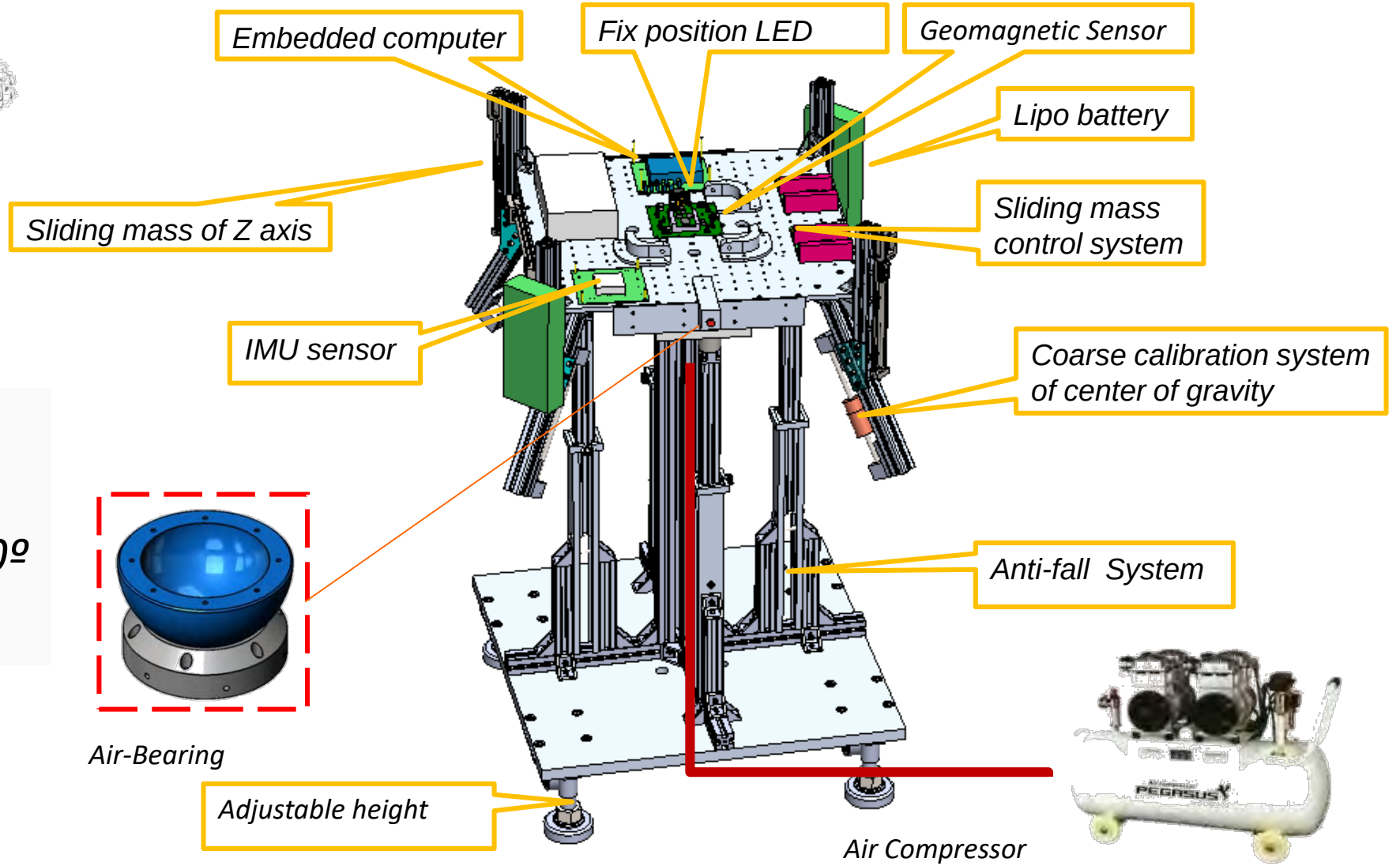


Indifferent equilibrium
(Center of gravity and center of rotation are coincident)

Micro-Gravity Simulator



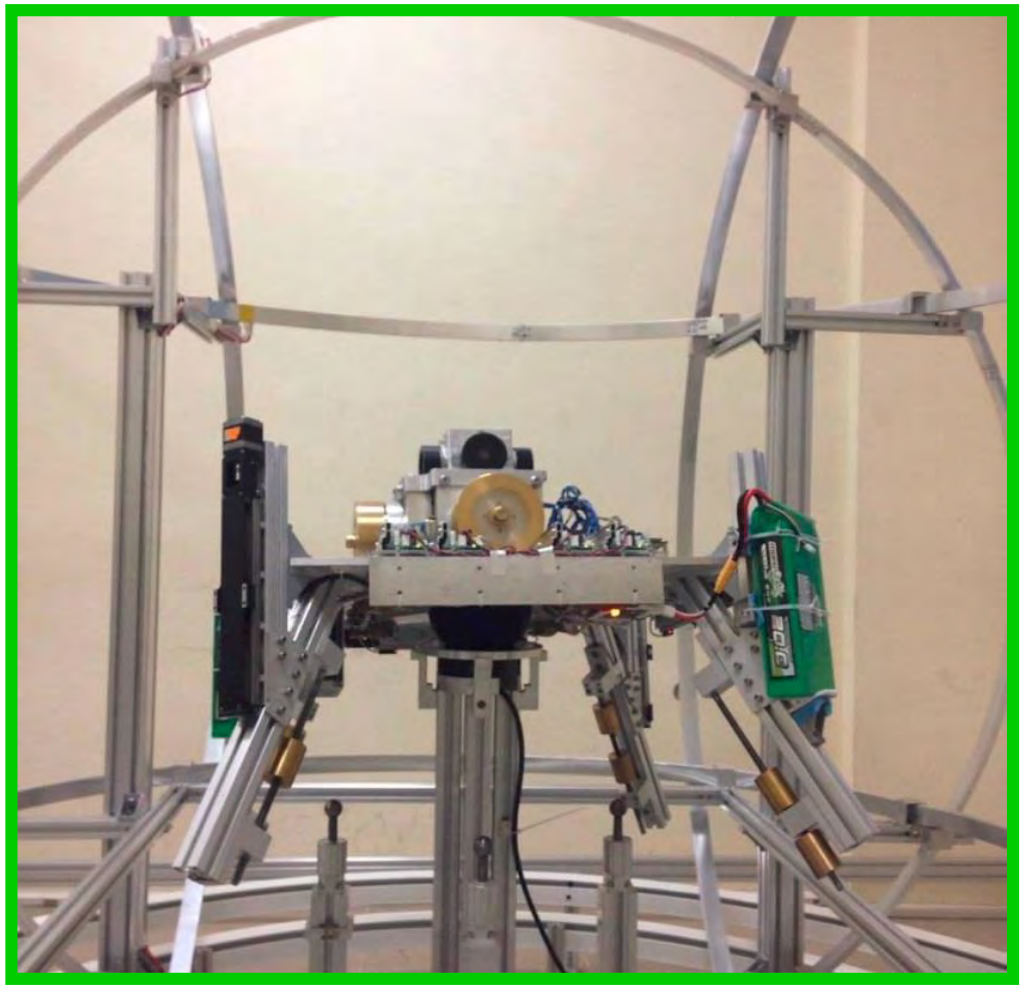




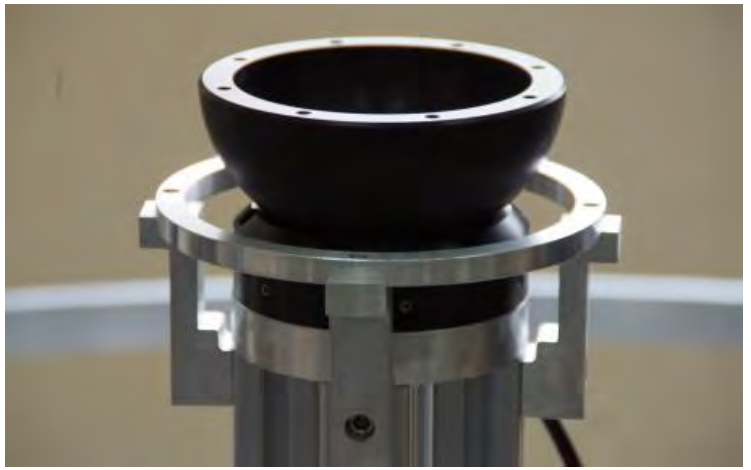
Requirement

- *Yaw angle ± 360º*
- *Roll, pitch angle ± 30º*

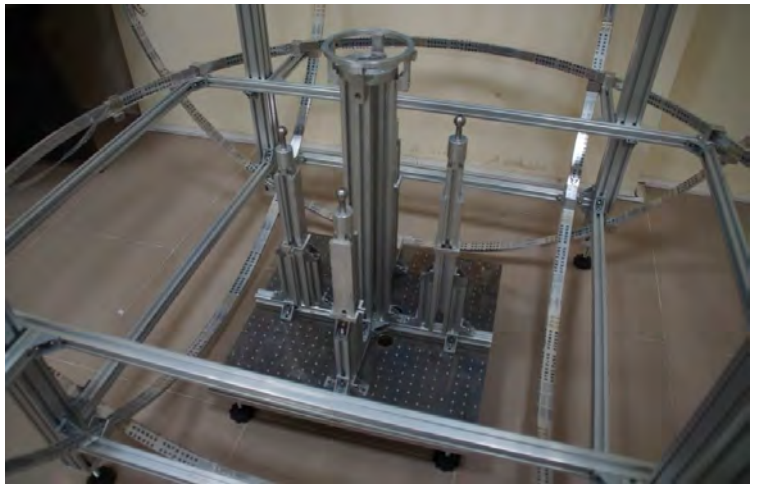
Testbed Design and Integration



Integrated micro-gravity simulator

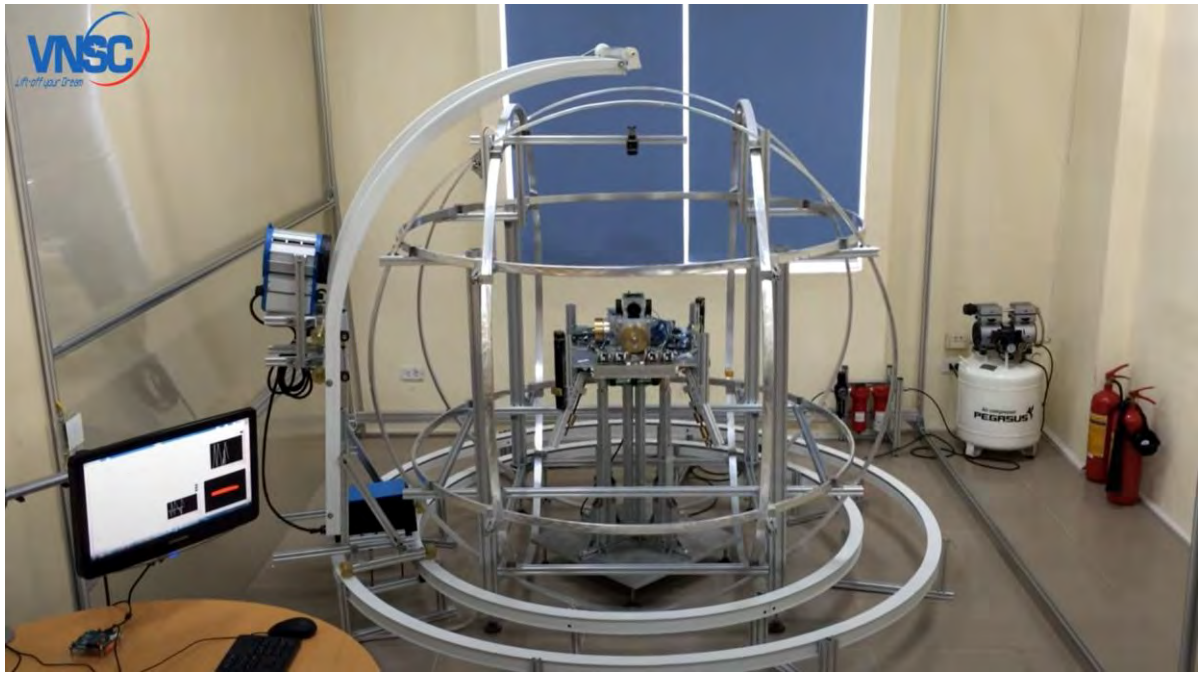


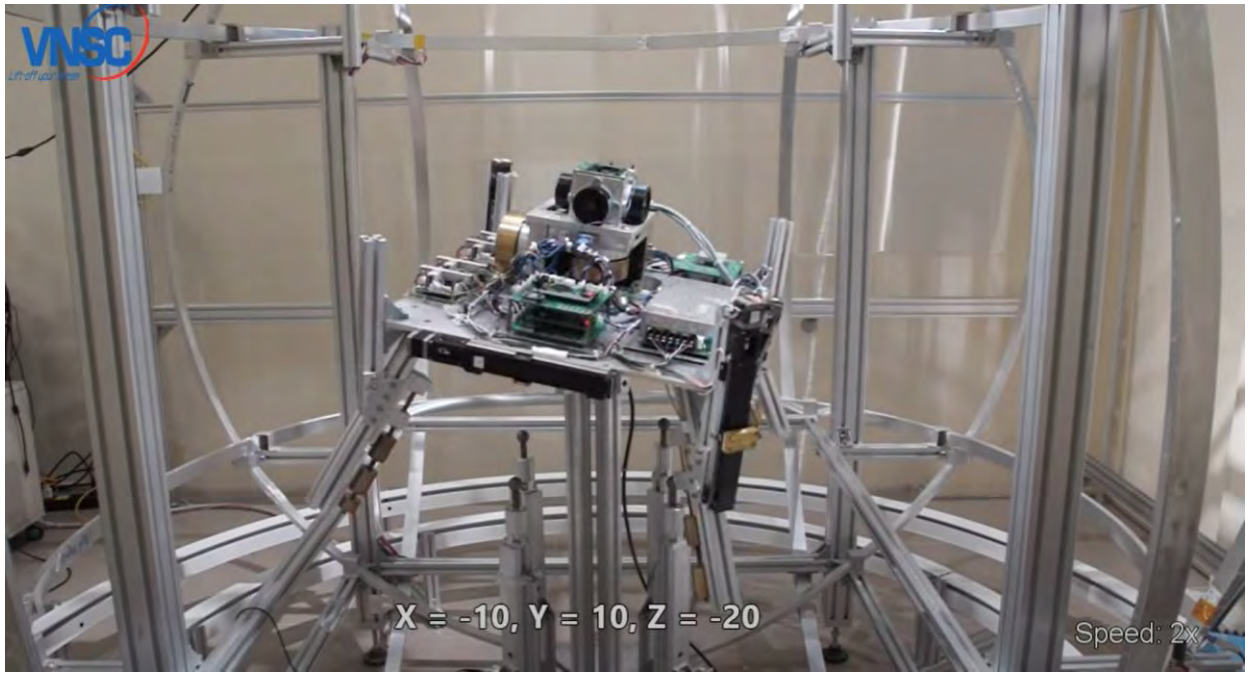
Air-bearing System



Anti-fall System

Integrated System and Demonstration





Video of Testing

https://www.youtube.com/watch?v=yIF7lX8wJ3c

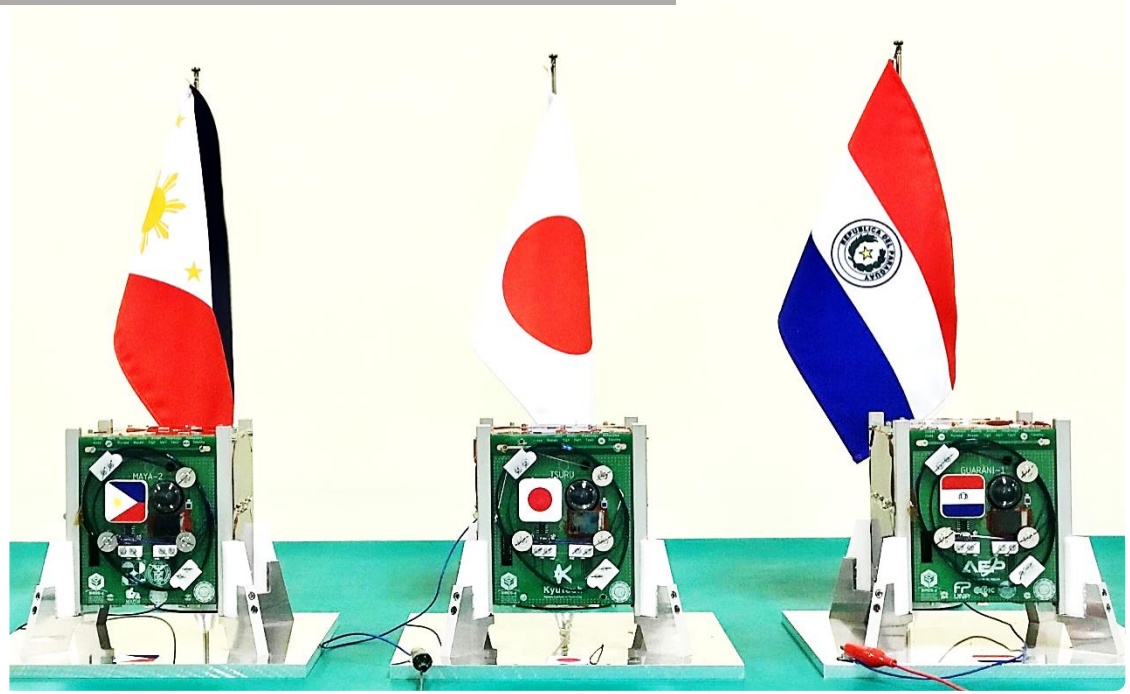
End of this article by Minh

BIRDS-4 Monthly Newsletter

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Solar cells attachment training for other projects

By
Hari Ram SHRESTHA
BIRDS-4, Nepal
05 June 2021



Training for Wood satellite project

Pooja and I (Hari), on behalf of the BIRDS-3 and BIRDS-4 Projects, provided training for Kyoto University's wood satellite project team members.

In addition, we provided training and shared our experience with solar cell attachments on board. During the training time, Prof. Nakamura and Prof. Murata, along with Mr. Sotsuka (student), practiced installing the cover glass on wooden board.

Kim sensei (Kyutech) was in charge of overseeing and supervising the training. We teach them how to attach the solar cell well to wooden board during the training. Then, we had showed them to require all materials and equipment for this work.

RTV putting on board by professor

Date: 6 April, 2021
Venue: Clean room ,3rd Floor, SBVL

RTV prepared by Mr.Sotsuka

During vacuuming for RTV

Photos: Hari and Kim sensei

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Article by:

Hari Ram SHRESTHA

Important points

1.Before beginning work, gather the required tools and components and clean the work table and others.

2. Secure cables on the ground to avoid trip hazards. Personal grounding is important during working hours.

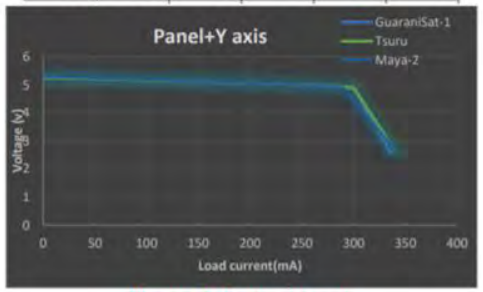
3.During the RTV preparation time, put the cross linker RTV S691A (red constituent) and catalyst RTV-S691B (transparent constituent) quite steadily and they're very costly.

3.Solar cells are fragile and pricey. Be responsible and aware care of it when working with attachments.

4.Apply the conductive glue to the desired position on the PCB as uniformly and finely as possible.

5.During work, follow the manual step by step, which is titled ‘'solar cells attachment procedure and its verification process."

Data +Y Panel					
I	GuaraniSat-1		Tsuru		Maya-2
0	5.28	0	5.25	0	5.3
50	5.2	50	5.212	50	5.23
100	5.163	100	5.165	100	5.18
150	5.1	150	5.116	150	5.12
200	5.05	200	5.062	200	5.06
250	4.98	250	4.996	250	4.98
300	4.88	300	4.898	290	4.89
336	2.58	341	2.6	342	2.6



VI curve of +Y axis solar panels

All pictures related on Solar cells attachments and its verification procedures

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Article by:

Hari Ram SHRESTHA

Training for BIRDS-5 teams

Kamitani and Derrick were testing solar power generation from the solar panel

Solar cells attachments practicing time in clean room

During solar cell and PCB soldering

Similarly, I instructed the BIRDS-5 team members on solar cell attachments. During training, Kamitani, Derrick, and Victor were the members who participated.

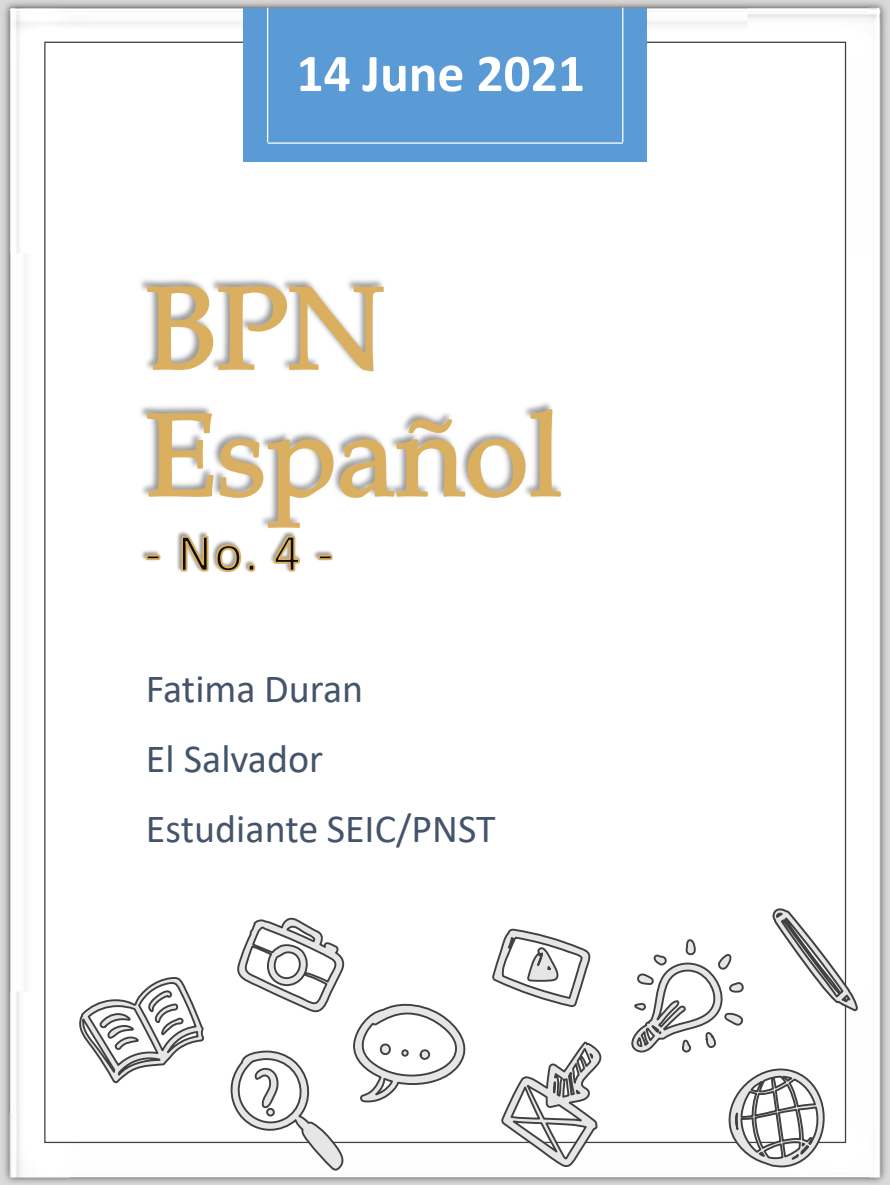
BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Article by:

Hari R. SHRESTHA

End of this article by Hari

16. Column #4 by Fatima of El Salvador



BPN=BIRDS Project Newsletter

¿Estudiar en el extranjero?

Uno de los principales obstáculos para muchos estudiantes, especialmente en países en vías de desarrollo, es la falta de recursos económicos para poder continuar con sus estudios superiores. Es por ello que estudiar en otro país parece una utopía, más aún si hablamos de estudiar carreras afines a la industria espacial. No obstante, las becas son una excelente oportunidad tanto a nivel académico como a nivel profesional y personal. En este artículo, te compartiré sobre el programa Post-graduate Study on Nano-satellite Technologies (PNST), del cual formo parte desde octubre de 2020.

United Nations/Japan Long-term Fellowship Programme "Post-graduate Study on Nano-Satellite Technologies (PNST)"

UNITED NATIONS
Office for Outer Space Affairs

Kyutech
Kyushu Institute of Technology

Kyushu Institute of Technology (Kyutech) y la Oficina de Asuntos del Espacio Ultraterrestre de las Naciones Unidas (UNOOSA, por sus siglas en inglés), han puesto en marcha un programa para estudiantes de posgrado, provenientes de países en vías de desarrollo o de naciones que aún no tienen acceso al espacio. El programa ofrece estudios de maestría y doctorado bajo el Space Engineering Internacional Course (SEIC), en el cual, los estudiantes aprenden sobre el diseño y desarrollo de nano-satélites. En cada convocatoria, un total de seis estudiantes, tres de maestría y tres de doctorado, son seleccionados para obtener una beca otorgada por el Ministerio de Educación, Cultura, Deportes, Ciencia y Tecnología de Japón, mejor conocido como MEXT, y puedan realizar sus estudios de posgrado en Kyutech.

¿Estudiar en el extranjero?

REQUISITOS

- Ser menor de 35 años.
- Tener buen dominio del idioma inglés.
- Ser ciudadano de países en vías desarrollo.
- Haber cursado estudios de pregrado o maestría en carreras afines a Ingeniería.
- ¡Ser apasionad@ por el espacio!

Fig. 1. Proyecto Birds-3, conformado por Sri Lanka, Nepal y Japón.

Fig. 2. Proyecto Birds-4, conformado por Filipinas, Japón y Paraguay.

Kyutech está ubicado en la ciudad de Kitakyushu, prefectura de Fukuoka.

PNST/MEXT cubre los gastos académicos y de manutención.

¿Estudiar en el extranjero?

DOCUMENTOS PARA APLICAR A LA BECA

- Formulario de nominación.
- Formulario de aplicación.
- Cartas de recomendación
- Historial académico (notas).
- Formulario de aplicación para la beca MEXT.
- Plan de estudio e investigación.
- Lista de verificación de documentos (checklist)

El programa de estudios en Kyutech es el Space Engineering Internacional Course (SEIC), en cual se cubren diferentes asignaturas relacionas al diseño, desarrollo y pruebas para un CubeSat. Para más información sobre SEIC/PNST puedes leer la presentación elaborada por Maeda-sensei, profesor adjunto en Kyutech y responsable del promover el programa PNST.

Haz clic aquí

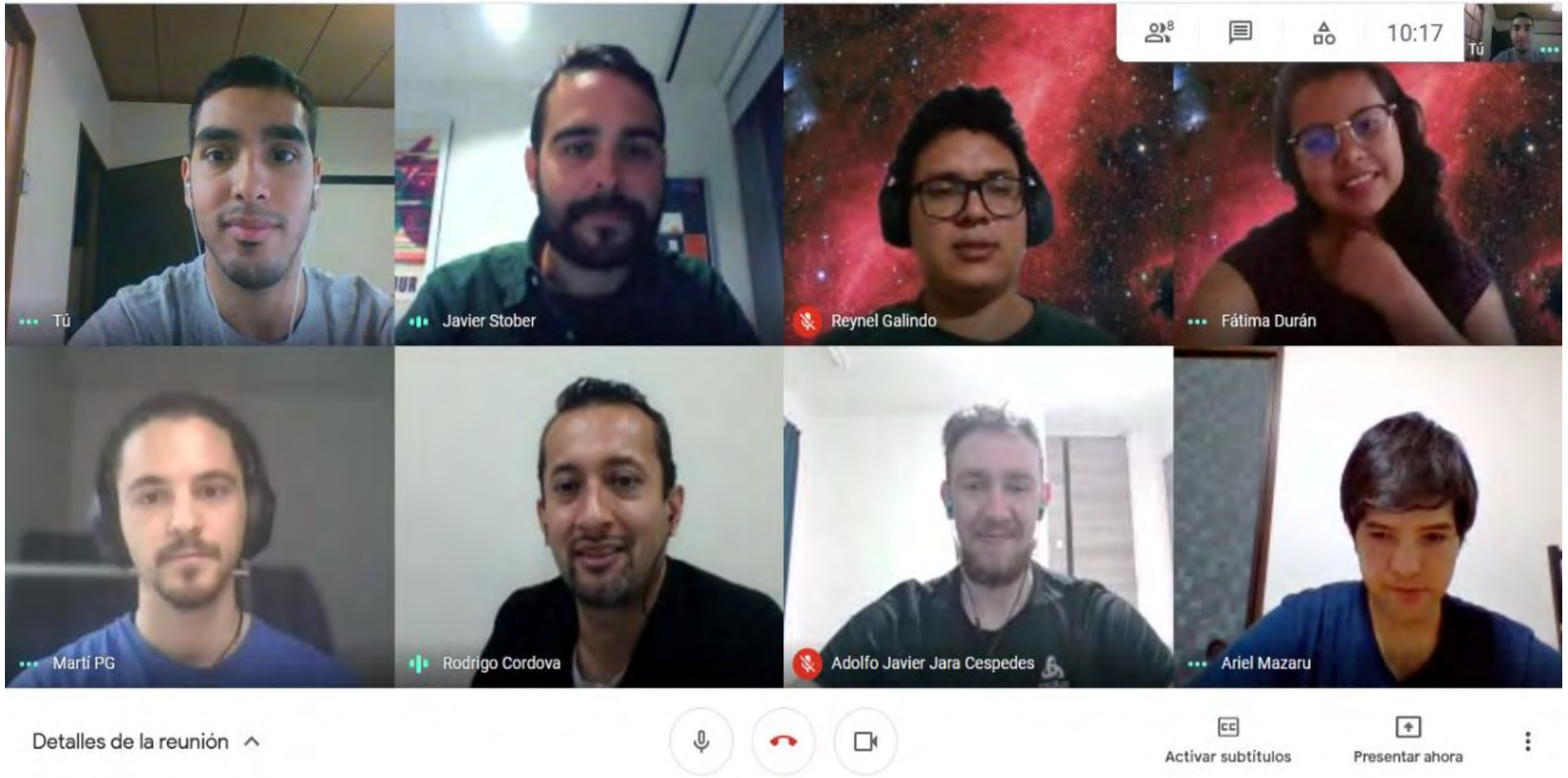
SEIC
Space Engineering International Course

Para más información…
https://www.unoosa.org/oosa/en/ourwork/psa/bsti/fellowships.html
https://kyutech-cent.net/unitednations.html

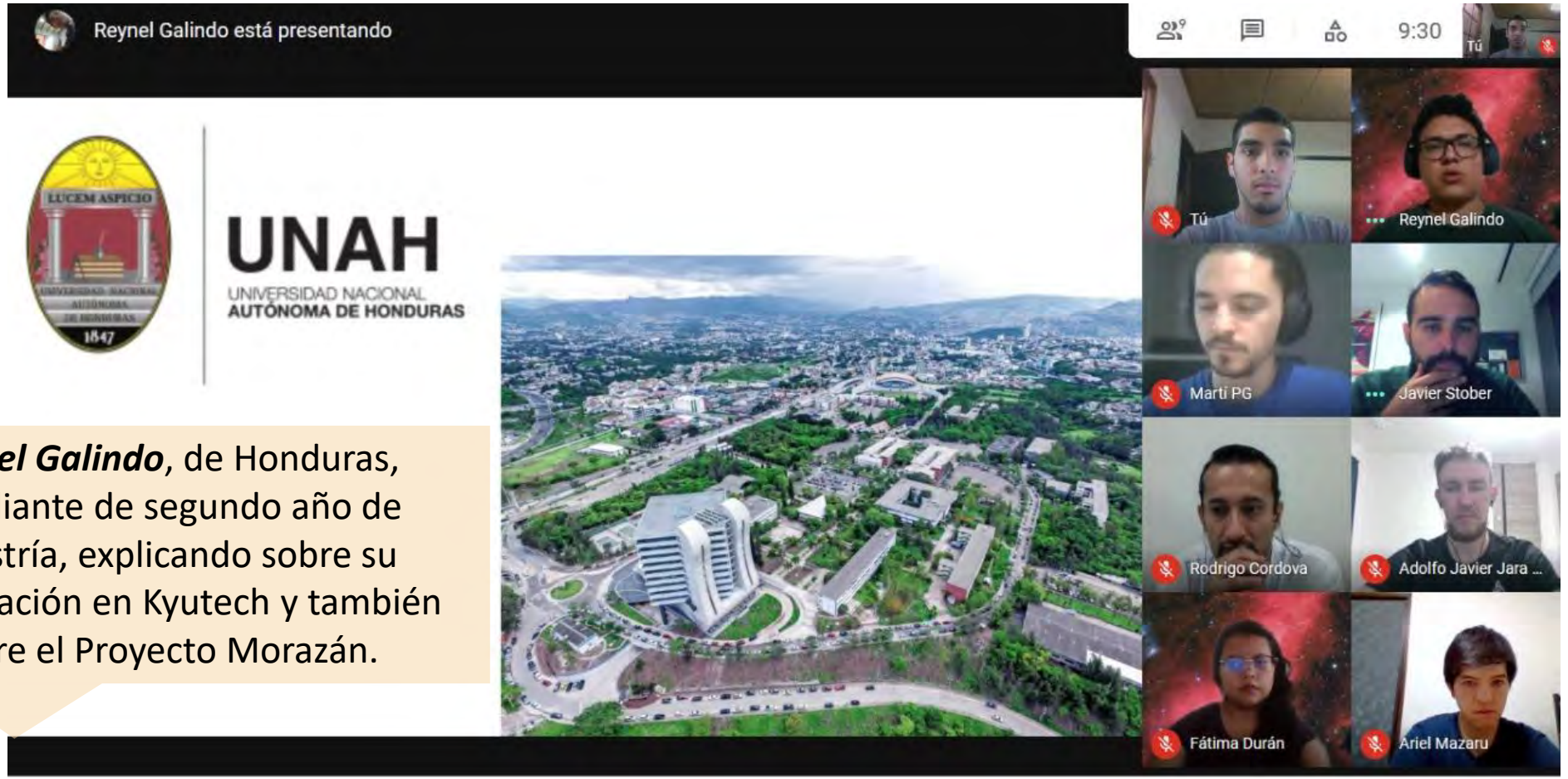
THE ONE AND ONLY WEBSITE FOR PNST

Mesa Redonda: Kyutech-MIT Media Lab

El 17 de mayo a las 9:00 AM (GMT+9) se llevó a cabo una Mesa Redonda entre *estudiantes hispano-hablantes de Kyutech* y el ***Dr. Javier Stober***, miembro de MIT Media Lab. Durante esta actividad, compartimos sobre nuestra investigación y también el Dr. Stober explicó algunas iniciativas para promover la industria espacial en la región Iberoamericana.



Mesa Redonda: Kyutech-MIT Media Lab



Reynel Galindo, de Honduras, estudiante de segundo año de maestría, explicando sobre su investigación en Kyutech y también sobre el Proyecto Morazán.

Otras actividades

El día 14 de mayo a las 7:00 PM (GMT-6), ***Maeda-sense***i y el ***Dr. Rodrigo Córdova*** participaron como ponentes invitados al evento ***Speaker of the Month – El Salvador Webinar Series***, una actividad llevada a cabo por los ***Puntos Nacionales de Contacto para El Salvador*** en ***Space Generation Advisory Council (SGAC), Ing. Alfredo Morales y mi persona***. Durante esta actividad, Maeda-sensei dio una presentación sobre el programa SEIC; seguidamente, el Dr. Rodrigo Córdova participó con el tema "Desarrollo de CubeSats en Kyutech: Diseño, Construcción, Ensamblaje y Operación".

Para más información sobre SGAC…
https://spacegeneration.org/

END OF FATIMA'S COLUMN FOR THIS MONTH

UiTMSAT COLUMN

15 June 2021 -- Column No. 18

Editor: FATIMAH ZAHARAH BINTI ALI (*ali.fatimahzaharah@gmail.com*)
PhD CANDIDATE, LABORATORY OF SPACE WEATHER AND SATELLITE SYSTEM
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UNIVERSITI TEKNOLOGI MARA (UiTM), SELANGOR, MALAYSIA

UNIVERSITI TEKNOLOGI MARA
UiTM Sentiasa Di Hatiku
"UiTM Always in My Heart"

IEEE ComSoc IEEE Communications Society
IEEE VTS Connecting the Mobile World
IEEE Malaysia COMSOC and VTS Joint Chapter

ACTIVITIES WITH IEEE MALAYSIA COMSOC & VTS JOINT CHAPTER

Institute of Electrical and Electronics Engineering (IEEE) is an organization that brings together professionals in the field of electrical and electronic engineering (EE) and other related ones in nurturing and dedicating the technology advancement for the benefit of humanity.

Figure 1: The committees of IEEE Malaysia ComSoc & VTS Joint Chapter.

Established in USA, the worldwide-recognized IEEE has multiple regional sections based on technical focuses.

In Malaysia, the **IEEE Malaysia**, consists of many chapters and societies where each of them focuses on different technical interests. Each chapter comprises of local EE enthusiasts as committees and members. Figure 1 earlier shows the line-up of 2021 committee members of **Communication Society (ComSoc) and Vehicular Technology Society (VTS) Joint Chapter** under IEEE Malaysia. This chapter emphasizes on communication-related technologies as main component to drive the objectives and missions of the non-profit organization.

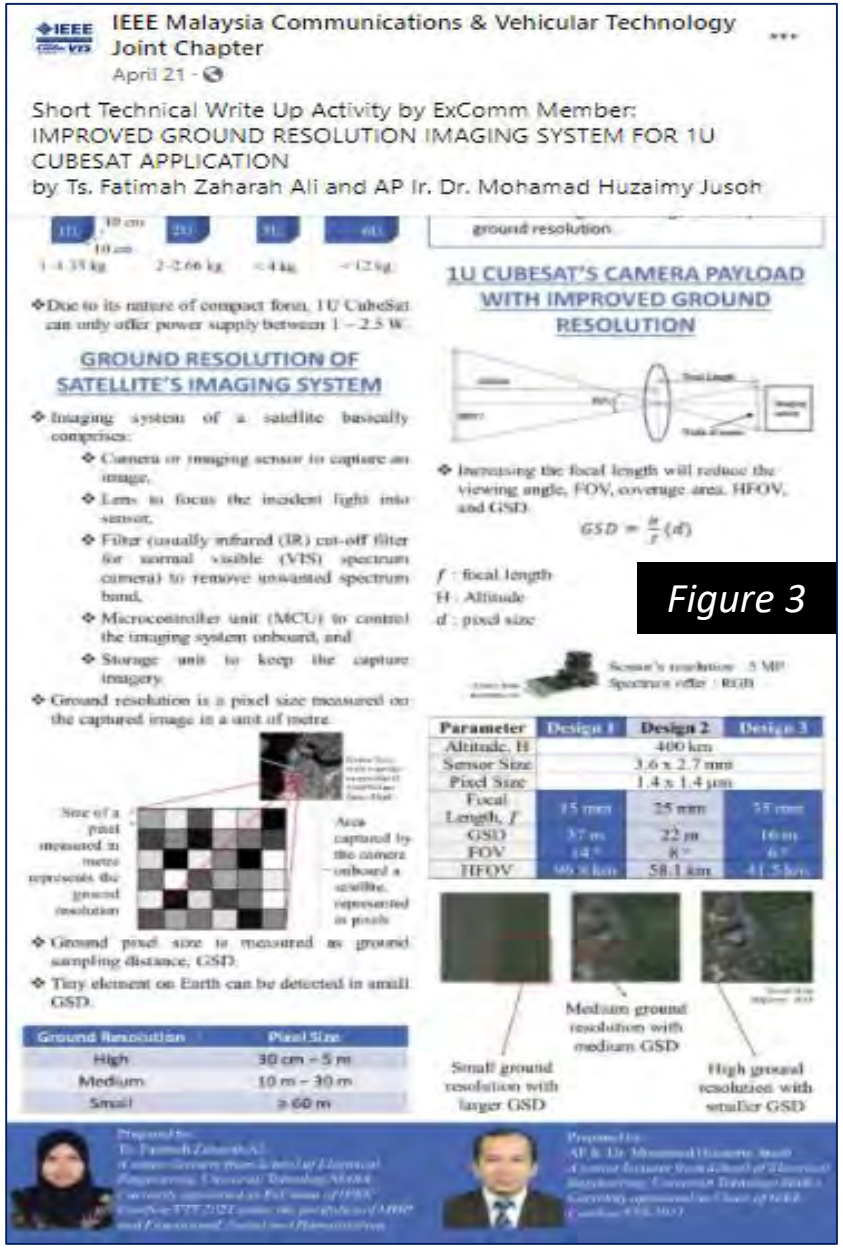
Recently, IEEE Malaysia ComSoc & VTS Joint Chapter had organized few non-profit activities for the benefits of the societies by providing knowledge and information on communication-related field.

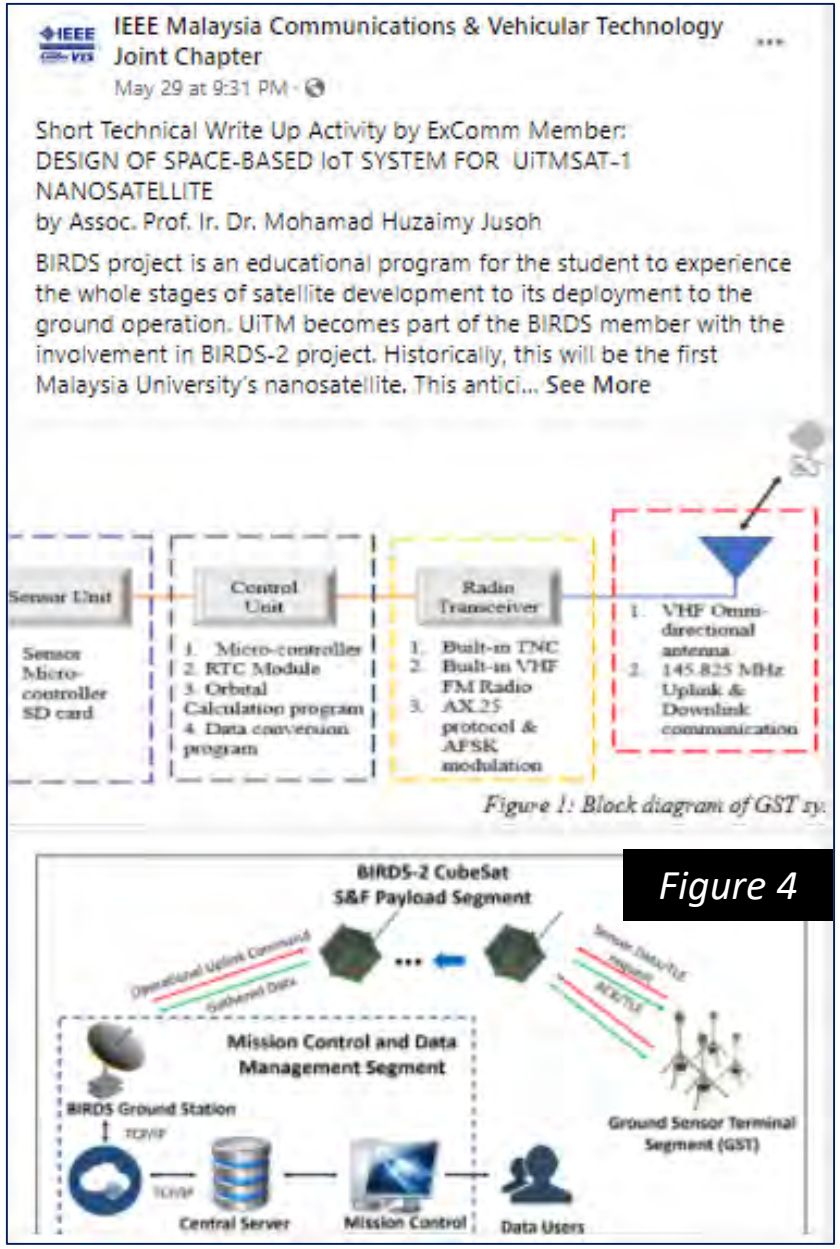
Figure 2: The Facebook homepage of *IEEE Malaysia ComSoc & VTS Joint Chapter.*
The link to the IEEE Malaysia ComSoc & VTS Joint Chapter Facebook account is:
https://www.facebook.com/comvt.org

The activities were carried out on the social media platform via the official account of IEEE Malaysia ComSoc & VTS Joint Chapter Facebook.

One activity was to provide monthly short technical write-up on any related information. The technical write-up were uploaded to the official Facebook account for public view.

In April, I had provided the short write-up on the imaging system with improved ground resolution for 1U CubeSat (refer Figure 3).





In the following month, Dr Mohamad Huzaimy had provided information on the design of space-based IoT system for UiTMSAT-1 nanosatellite (refer Figure 4). These two (2) articles can be found on the Facebook account of IEEE Malaysia ComSoc & VTS Joint Chapter through https://www.facebook.com/comvt.org

The next activity was to utilize the Malaysian school holiday break from 7th to 11th June 2021. IEEE Malaysia ComSoc & VTS Joint Chapter had organized a free online program titled “Knowledge Sharing Program in Conjunction with School Holidays!” for school students to learn on communication related technologies. One of the topics covered for the program was “Satellite and Its Usage”. The talk, which was conducted in the Malay language, was aimed to provide distinctive approach from the other typical school holiday programs an attract more student interest in the communication field.

Figure 5: A poster (in Malay language) used to promote the Program of Knowledge Sharing in Conjunction with School Holidays by IEEE Malaysia ComSoc & VTS Joint Chapter.

Figure 6: A screenshot during the talk where I explained on the basic satellite information to the school students through Facebook Live. It can clearly be seen that on the right side, there are many comments mostly questions given by the participants of the talk.

The program was performed live through official Facebook account for 1 hour-duration and participants can join the program even without the social media account.

The program was remarkably well received with over 100 people participated actively during each talk conducted in the program. Many questions were asked by the students in the chat box and quizzes given were answered actively by them. This showed that they are very interested to join in the knowledge-related activity.

In addition, students that joined 3 out of 5 talks of the program were entitled to received certificate of participation.

End of Malaysia's Column

OLAYINKA'S WORLD

COLUMN NO 23

OLAYINKA FAGBEMIRO
ASSISTANT CHIEF SCIENTIFIC OFFICER,NATIONAL SPACE RESEARCH & DEVELOPMENT AGENCY(NASRDA), ABUJA. NIGERIA. HEAD, SPACE EDUCATION UNIT
FOUNDER/NATIONAL COORDINATOR, ASTRONOMERS WITHOUT BORDERS (AWB) NIGERIA
NATIONAL ASTRONOMY EDUCATION CONTACT (NAEC), NIGERIA
PUBLIC RELATIONS AND EDUCATION OFFICER, AFRICAN ASTRONOMICAL SOCIETY (AfAS)

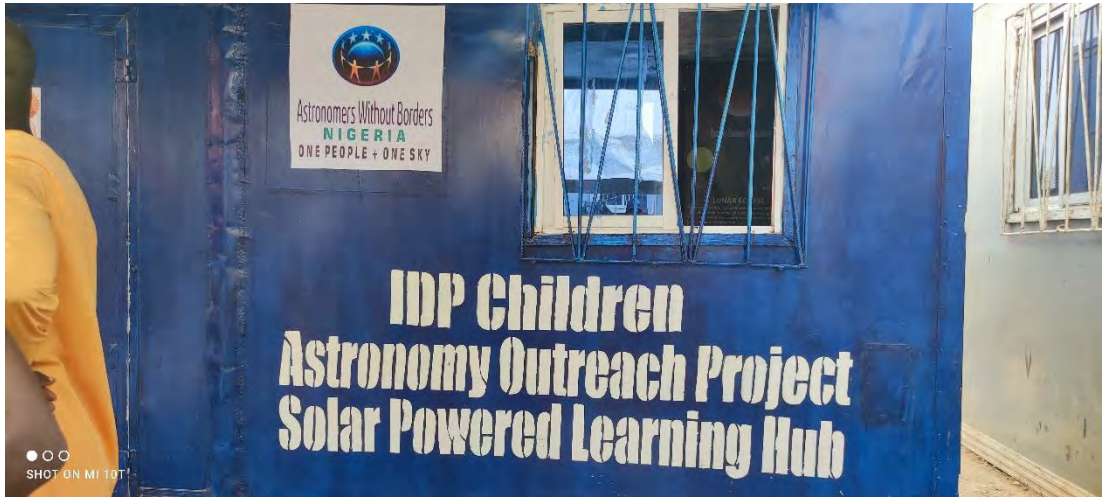
Olayinka's World
...in space to make a difference

15 June 2021

2nd Astronomy Outreach for Internally Displaced People's (IDP) Kids

We launched our 2nd Project at the **Internally Displaced Persons** (IDP) Camp on the 13th March, 2021. Another Solar Powered Astronomy Learning Hub for teaching STEM to IDP kids. This project is very strategic for the AWB Nigeria in her quest to popularize Astronomy and using it as a tool to create awareness on STEM among school kids as well as the disadvantaged kids who have been affected by the Insurgency in the North Eastern Region of Nigeria. CONTINUED NEXT COLUMN

This is made possible with the support of our Partners; Office of Astronomy for Development (OAD), Cape Town, SSVI, Brussels. Special thanks also to the National Commission for Refugees, Migrants and Internally Displaced Persons, Office of the Speaker of the National Assembly and the many wonderful Volunteers that made this project a huge success! CONTINUED NEXT PAGE

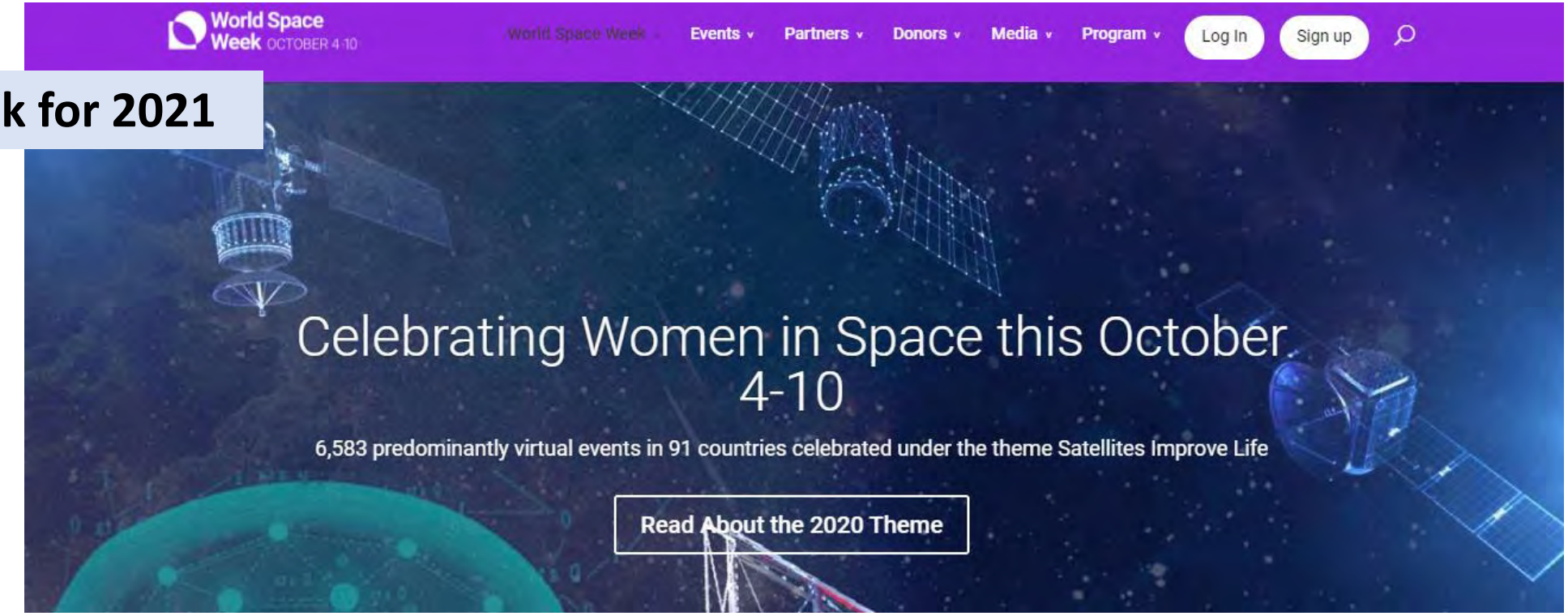


A summary of the activities at the launch of the Solar Powered Hub project at the IDP Camp

Location: Outskirts of Abuja.
Date: 13 March 2021

19. World Space Week for 2021

Kyutech is also celebrating WSW this year, with its theme: *"Women in Space".* If you wish to get involved, please contact Timothy of the BIRDS-5 Project. *--Editor*.



https://www.worldspaceweek.org/

World Space Week

More than 8,000 events in 96 countries celebrated "The Moon: Gateway to the Stars" last year (2019). This year (2020) the theme is "Satellites Improve Life." In 2021, World Space Week celebrates "Women in Space."

"The General Assembly declares 4 to 10 October World Space Week to celebrate each year at the international level the contributions of space science and technology to the betterment of the human condition"

UN General Assembly resolution, 6 December 1999

World Space Week
October 4 - 10

20. Experiencing BIRDS-4 satellite operations

Submitted by:

- **Ariel MANABE**
- **Esteban FRETES**

(both SEIC students, from Paraguay)
on 15 June 2021.

Satellite operation experience with Birds 4 team

Have you ever wondered how a satellite is operated? Well, before starting this endless but fascinating journey in this world, many of us at some point did.

To begin with, there is a plethora of information someone needs to absorb and assimilate to understand what is going on, the road gets easier with the help of the "Elmers" though. Elmer is a curious word used in the radio amateur or HAM, to refer to a certain experienced and certificated person that teach someone else the principles of radio communication, in other words, a senpai (先輩)

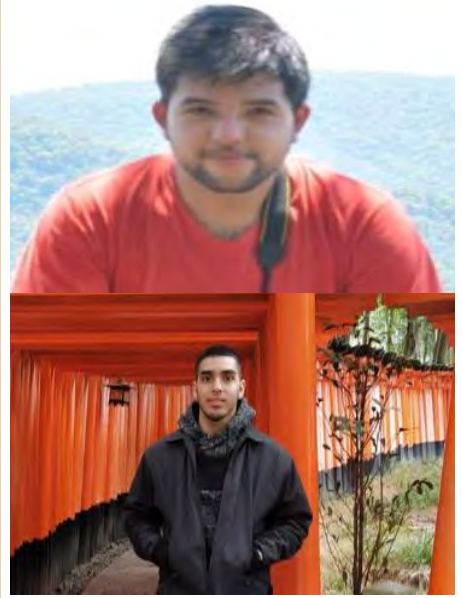
One of the stations in Kyutech ground station

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Article by:

Ariel MANABE

Esteban FRETES



Satellite operation experience with Birds 4 team

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Article by:

Ariel MANABE

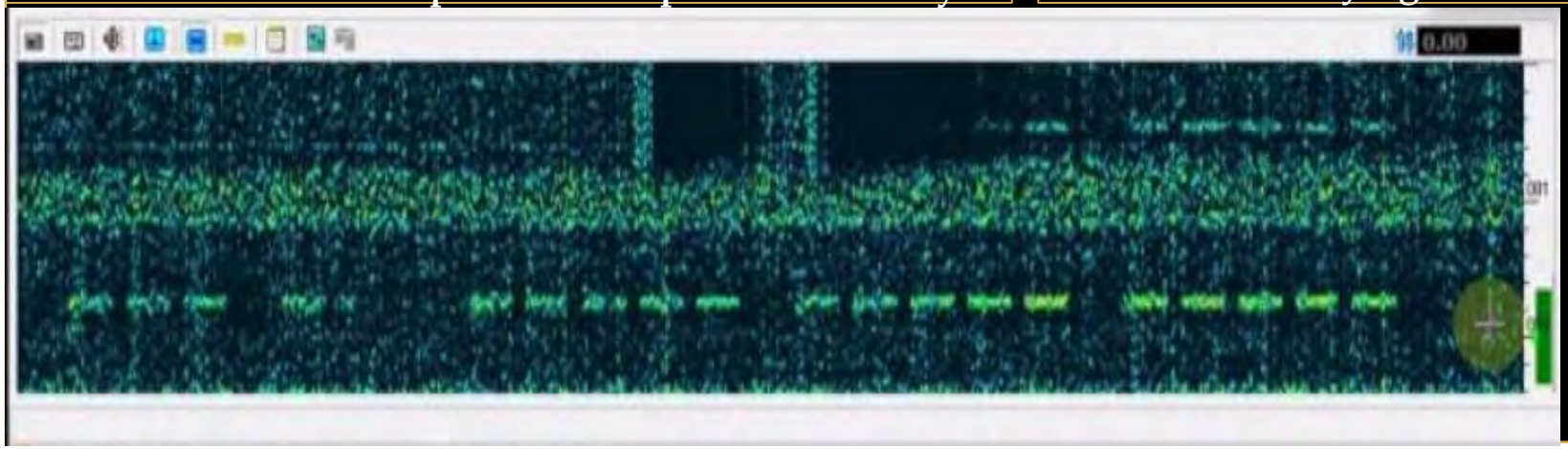
Esteban FRETES

But wait, why we mention HAM radio? The answer obeys that to operate a satellite there is necessary to deal with rules and the principles governing the radio communication world, and the most important aspect, one needs to be certificated by the Federal Communications Commission, FCC). Before getting the license, let us tell how we started.

Our first senpai was Adolfo; from Birds 4 team. He showed us the basics to perform the operation correctly.

The first steps involve from connection of the equipment such as the Transceiver, the TNC, the power supply and the antenna rotator, to how getting started with the software where the exchange of information with the satellite takes place.

During the first times of operation, we became familiar with the equipment and software, and also started studying International Morse code



CW Skimmer software showing the received CW from the satellite

Satellite operation experience with Birds 4 team

which is the “language” used to send and receive the CW, a signal with the narrowest bandwidth that contains the satellite’s status.

At the beginning the whole process seemed complicated, but as we were learning from the other members of Birds 4, it got better. We also had a meeting where IZ, showed us the process by which the commands to send to the satellite are generated depending on the task or mission to be carried out. Long arrays of confusing hex numbers! Patient is needed to understand this part

Overall, is an enriching and unique experience, not always someone can say: “Hey, I will operate a satellite this afternoon”, hence the opportunity to carry out the operation of a real satellite and to learn a lot about it, is just tremendous. We can observe all the data that received from, analyze it, and see if it is correct; and if they are not, be able to study the problems and look for solutions. From the team members we feel we are learning a lot and that we will continue to do so.

Do not forget we mention earlier the Ham Radio Test. Self-preparation was needed to obtain the license that allows us to operate the satellite. So, this is up to you, but remember, there is always an Elmer or senpai that can help you. The Ham test was also an interesting experience, since we were able to learn with more

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Article by:

Ariel MANABE

Esteban FRETES

details technical aspects related to telecommunications and thus being able to use that knowledge during the real satellite operation and communication.

END OF THIS SECTION

A photo taken after we and fellow Kyutech students and staff involved in the satellite project took the Ham radio examination (J:COM HorutoHall, Oita – 5th June 2021).

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

21. Japanese Gardens, by *Highlighting Japan*, monthly news magazine

PUBLIC RELATIONS OFFICE
GOVERNMENT OF JAPAN

Home > Highlighting JAPAN > Highlighting JAPAN May 2021

HIGHLIGHTING
Japan

May 2021

JAPANESE GARDENS

INDEX

– THEME FOR May

JAPANESE GARDENS

Various kinds of gardens have been created all over Japan since ancient times, but they tend to have certain things in common. In this month's issue of Highlighting JAPAN, we reveal some of the characteristics of Japanese gardens by introducing some of the best known and most beautiful examples.

PDF(1,087KB)

DOWN LOAD THIS PDF FROM THIS SITE

https://www.gov-online.go.jp/eng/publicity/book/hlj/20210501.html

GST Column

The Eighth Column: GST Updates

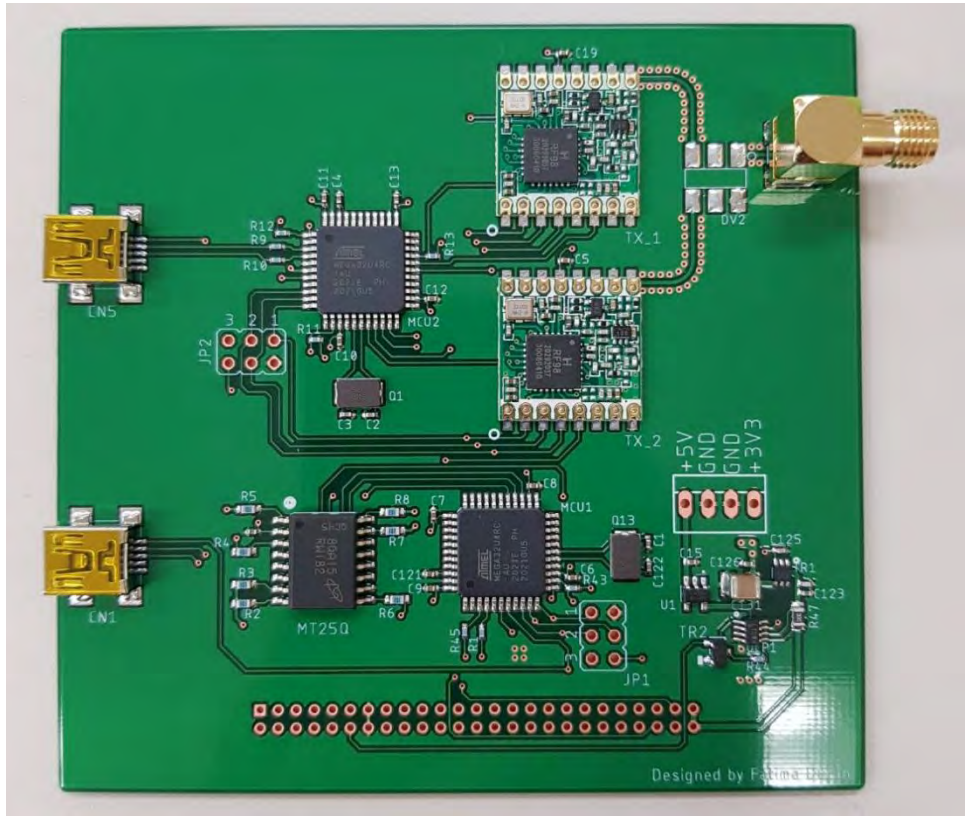
by Pooja Lepcha (Bhutan)
and Fatima Duran (El Salvador)

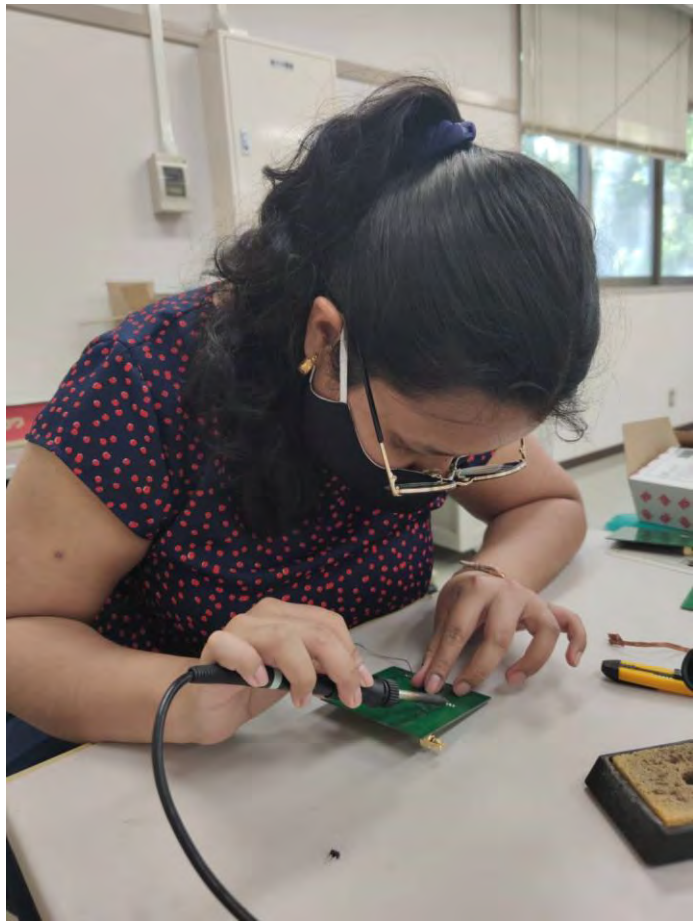
15 June 2021

GST=Ground Station Terminal

Updates

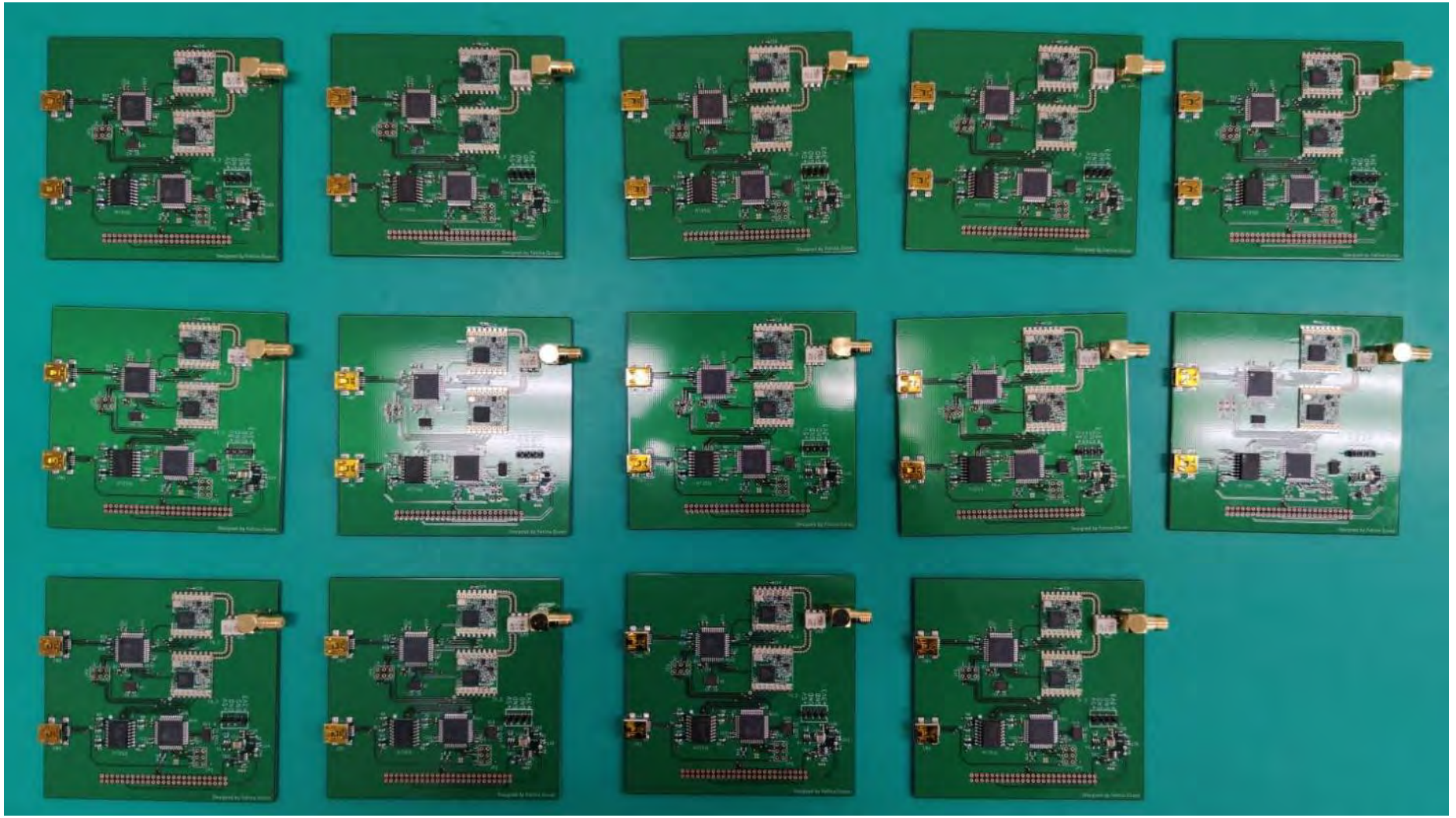
The receiver payloads have arrived. Few unsoldered components were soldered, and Bootloaders for Arduino micro was uploaded to each of these boards





← Fatima at work on receiver boards

After the software code is finalized, the receiver boards (shown below) will be programmed and sent to GST Network countries.



Performing tests outdoors with GST and receivers

Fatima and I tested the communication between the receiver boards and GST outdoors

← Main gate of Kyutech, 九州工業大学

END OF GST COLUMN #8

23. Report from the Philippines

Philippine Space Agency

Philippines inks two international space cooperation agreements in June

The month of June has been a momentous one for the Philippines as the country forged landmark space cooperation agreements with two international agencies.

UNITED NATIONS
Office for Outer Space Affairs

Through the Philippine Space Agency (PhilSA), a Memorandum of Understanding (MOU) was signed with the United Nations Office for Outer Space Affairs (UNOOSA) on 04 June 2021.

JAXA

A Memorandum of Cooperation was also formalised between PhilSA and the Japanese Aerospace Exploration Agency (JAXA) on 11 June 2021.

PREPARED BY:

Tricia Zafra
Jo Briones
Pricila Aquino
Public Relations and Information Division (PRID)
Philippine Space Agency

PhilSA Director General Joel Marciano Jr. and UNOOSA Director Simonetta di Pippo with the signed Memorandum of Understanding

Read more here: https://philsa.gov.ph/news/philsa-and-unoosa-sign-mou

QUEZON CITY/VIENNA, 04 JUNE 2021 – The Philippine Space Agency (PhilSA) and United Nations Office for Outer Space Affairs (UNOOSA) have signed an agreement on space cooperation to strengthen the institutions' shared commitment to the peaceful uses of outer space.

Signed by PhilSA Director General Joel Marciano Jr. and UNOOSA Director Simonetta di Pippo, the Memorandum of Understanding (MOU) will provide a framework for cooperation between the two parties to collaborate on various strategic areas, initiatives, and activities related to space science, technology, policy, law, education, and capacity-building.

Under the MOU, PhilSA and UNOOSA shall explore opportunities for:

1. Joint capacity-building activities at the national level to enhance the use of space science and technology for socio-economic development, particularly in line with the implementation of the Sustainable Development Goals;
2. Using space-based information for disaster risk reduction and emergency response through the UN Platform for Space-based Information for Disaster Management and Emergency Response (UN SPIDER) program;
3. Expanding mutual collaboration on activities related to international space law; and
4. Securing collaboration for joint public awareness and education outreach initiatives on the importance of space science and technology for socio-economic development.

PhilSA

QUEZON CITY/TOKYO 11 JUNE 2021 – The Philippine Space Agency (PhilSA) signed a Memorandum of Cooperation (MOC) with the Japan Aerospace Exploration Agency (JAXA) on Friday in a virtual signing ceremony held simultaneously in Quezon City and Tokyo. The signing was led by PhilSA Director General Dr. Joel Marciano, Jr. and JAXA President Dr. YAMAKAWA Hiroshi.

PhilSA Director General Dr. Joel Joseph Marciano, Jr. (left) and JAXA President Dr. YAMAKAWA Hiroshi (right) sign space cooperation agreement

Read more here: ***https://philsa.gov.ph/news/philsa-and-jaxa-formalize-space-cooperation/***
https://tokyo.philembassy.net/02events/philippines-japan-sign-space-cooperation-agreement/

The MOC seeks to explore opportunities for collaboration in the areas of:

1. Space Applications;
2. Satellite Development;
3. Space Environment Utilization;
4. Capacity building for space-related technology development, space policy, and legislation,
5. Space science and space exploration, and
6. Promotion of space industry.

With the support of the Philippines' Department of Foreign Affairs (DFA), the agreement also defines procedures of collaboration based on peaceful and mutually beneficial uses of outer space.

PhilSA

STAMINA4SPACE

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Photo courtesy of the University of the Philippines Diliman Institute of Environmental Science & Meteorology (UP-IESM) Facebook page

CONGRATULATIONS, Dr. Gay Jane Perez!

Philippine Space Agency (PhilSA) Deputy Director-General and STAMINA4Space Advanced Satellite and Know-how Transfer for the Philippines (ASP) Project Leader, Dr. Gay Jane Perez, was awarded as one of the 2021 NAST Outstanding Young Scientist for Satellite Technology (Physics).

Philippine Space Agency

STAMINA4Space Program

STeP-UP Scholars Batch 1

STeP-UP Scholars Batch 2

3D render of the MULA satellite. Photo courtesy of SSTL.

PH aims to have a new EO satellite in space by 2023

Dubbed Multispectral Unit for Land Assessment (MULA), the satellite will weigh 130 kg and carry a TrueColor camera capable of capturing operational-quality images covering approximately 100,000 km^2 of land area daily for different environmental applications. It will also be equipped with two other payloads: Automatic Identification System (AIS) and Automatic Dependent Surveillance-Broadcast (ADS-B), which can be utilized for ship and aircraft detection and tracking.

Recently, Filipino engineers training with Surrey Space Technology, Ltd. (SSTL) in the UK passed the Qualification Status Review (QSR) — a key development in the satellite's design phase

Read more here: bit.ly/3ga25YC

Philippine Space Agency

STAMINA4Space Program

STeP-UP Scholars Batch 1

STeP-UP Scholars Batch 2

STeP-UP PROJECT

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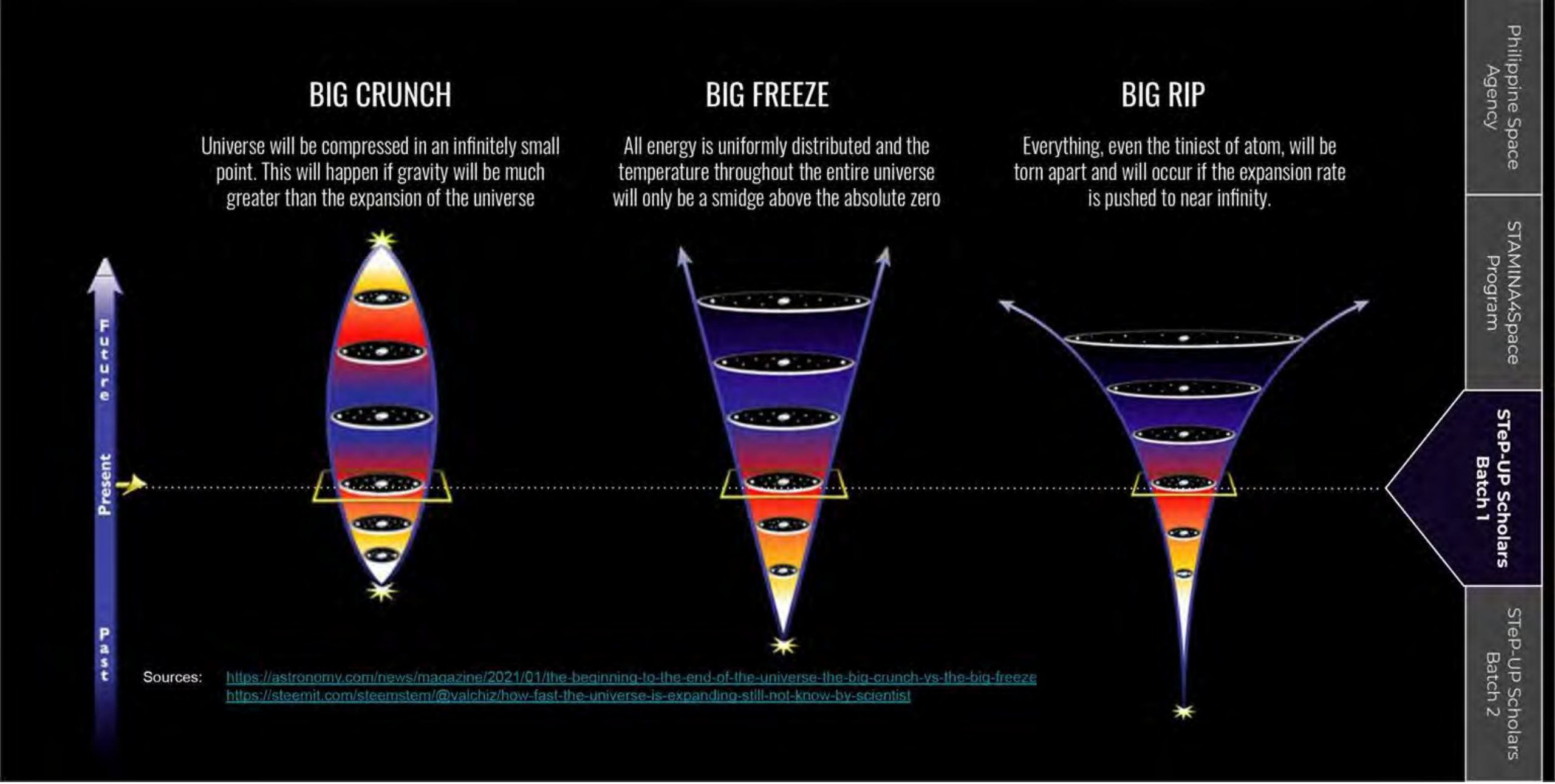
The Department of Science and Technology - Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST - PCIEERD) launched a science communication campaign in proliferating knowledge through a social networking platform called TikTok. Using the hashtag #AskPinoyScience, we can watch videos presenting answers to Science's most interesting questions.

The STeP-UP Batch 1 Scholars were tapped to answer a question regarding the expansion of the universe. Take a look of some of the behind the scenes pictures during production and our answer.


BIG CRUNCH
Universe will be compressed in an infinitely small point. This will happen if gravity will be much greater than the expansion of the universe
BIG FREEZE
All energy is uniformly distributed and the temperature throughout the entire universe will only be a smidge above the absolute zero
BIG RIP
Everything, even the tiniest of atom, will be torn apart and will occur if the expansion rate is pushed to near infinity.
Future
Present
Past
Sources: https://astronomy.com/news/magazine/2021/01/the-beginning-to-the-end-of-the-universe-the-big-crunch-vs-the-big-freeze
https://steemit.com/steemstem/@valchiz/how-fast-the-universe-is-expanding-still-not-know-by-scientist
Philippine Space Agency
STAMINA4Space Program
STeP-UP Scholars Batch 1
STeP-UP Scholars Batch 2

STeP-UP PROJECT

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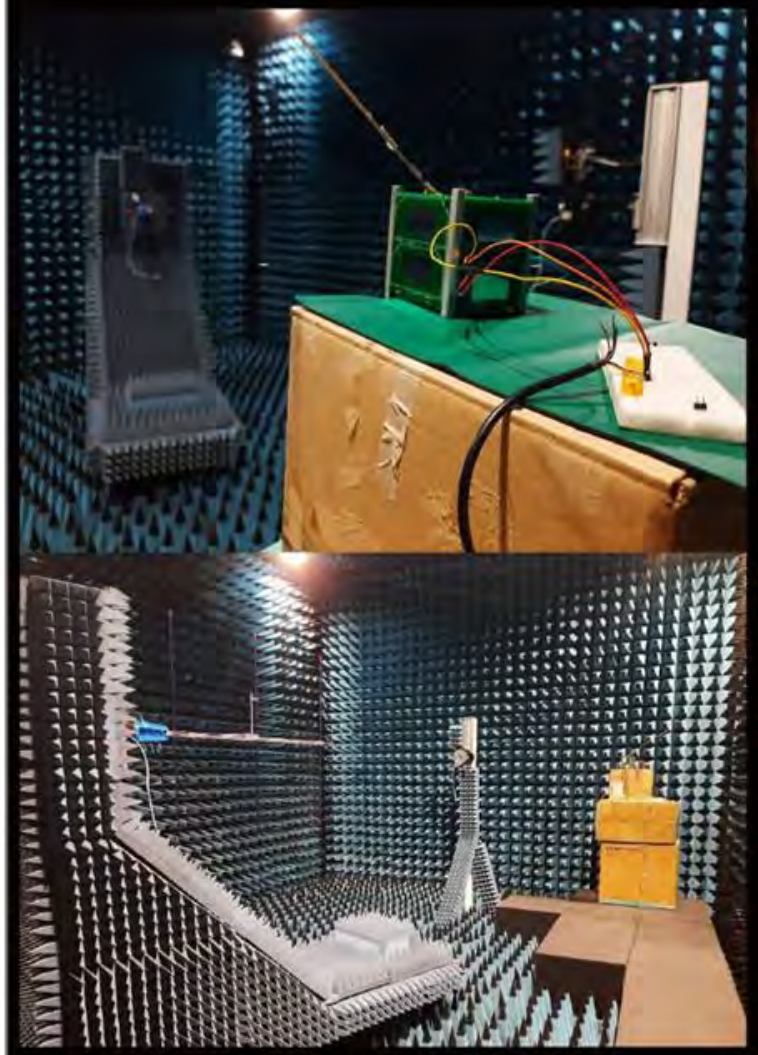


Uplink Sensitivity Test Setup

UPLINK SENSITIVITY TEST

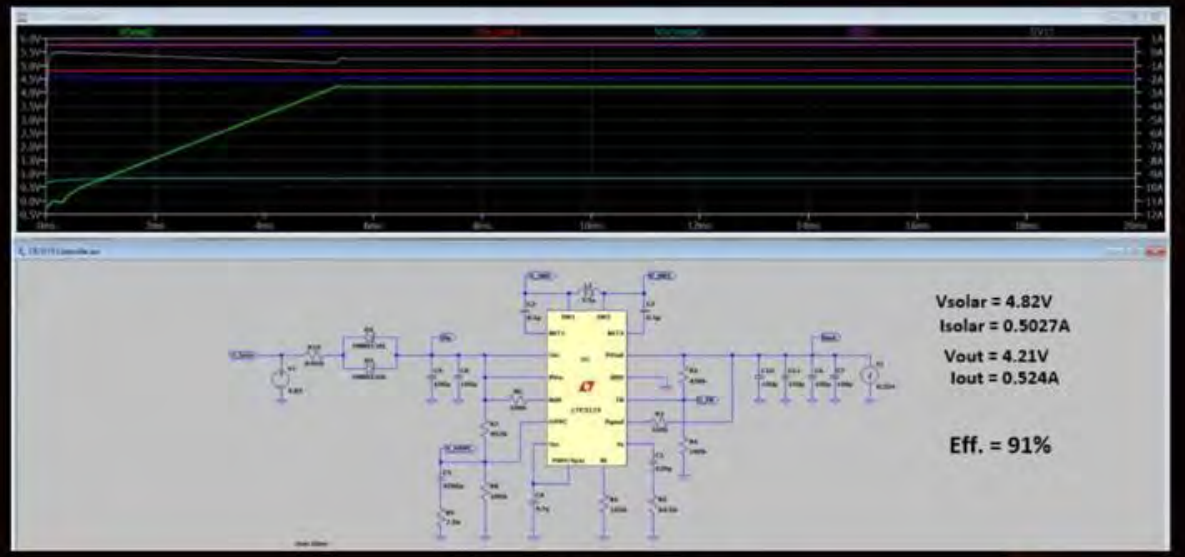
Uplink sensitivity tests for the COM Subsystem were conducted in the full anechoic chamber in UP EEEI. 10 uplink commands were sent by the GS PC and monitored if the satellite responds. Attenuators were added until the GS PC does not receive data from the satellite anymore. The uplink sensitivity is defined at 50% success rate.

Philippine Space Agency
STAMINA4Space Program
STeP-UP Scholars Batch 1
STeP-UP Scholars Batch 2

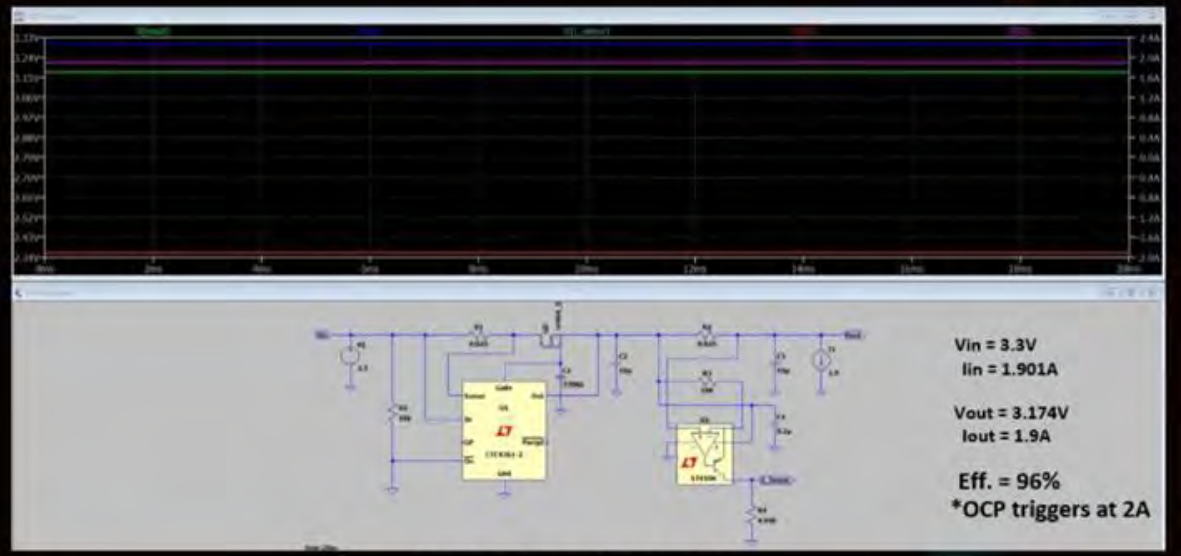
EPS SIMULATIONS

Simulations for the EPS Section are ongoing, as part of its characterization and performance evaluation.

After the system-level evaluation of the BCR, it was found that there is a 3% deviation from the simulation. The BCR is evaluated at the maximum power point of the solar cells.



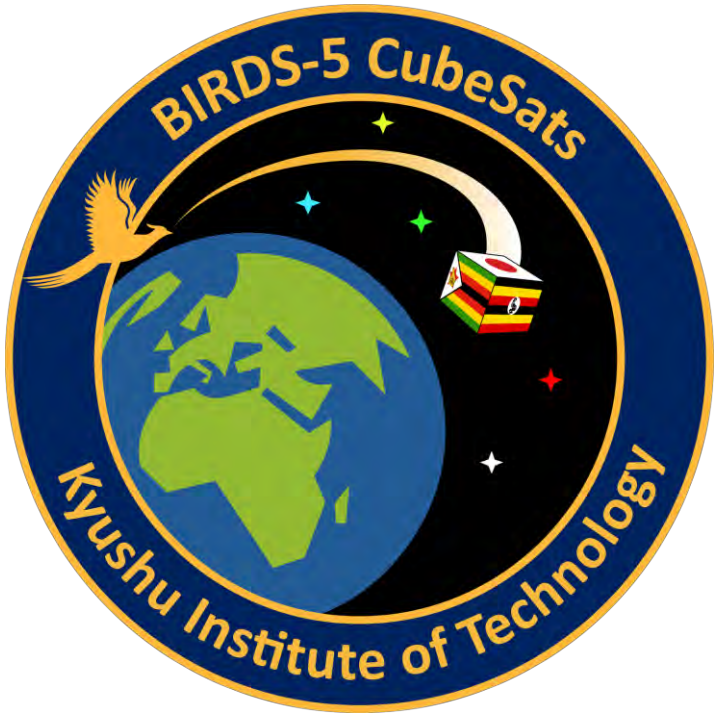
BCR Simulation in LTSpice



OCP Circuit Simulation in LTSpice

HAPPY BIRTHDAY RONALD!

The team wishes to greet this super dad who turned a year wiser last May 26. Happy, happy birthday, Ronald!



The following sections are the BIRDS-5 articles for June 2021

(compiled by Fahd of Morocco)

BBM=Bread Board Model

PINO BBM test status

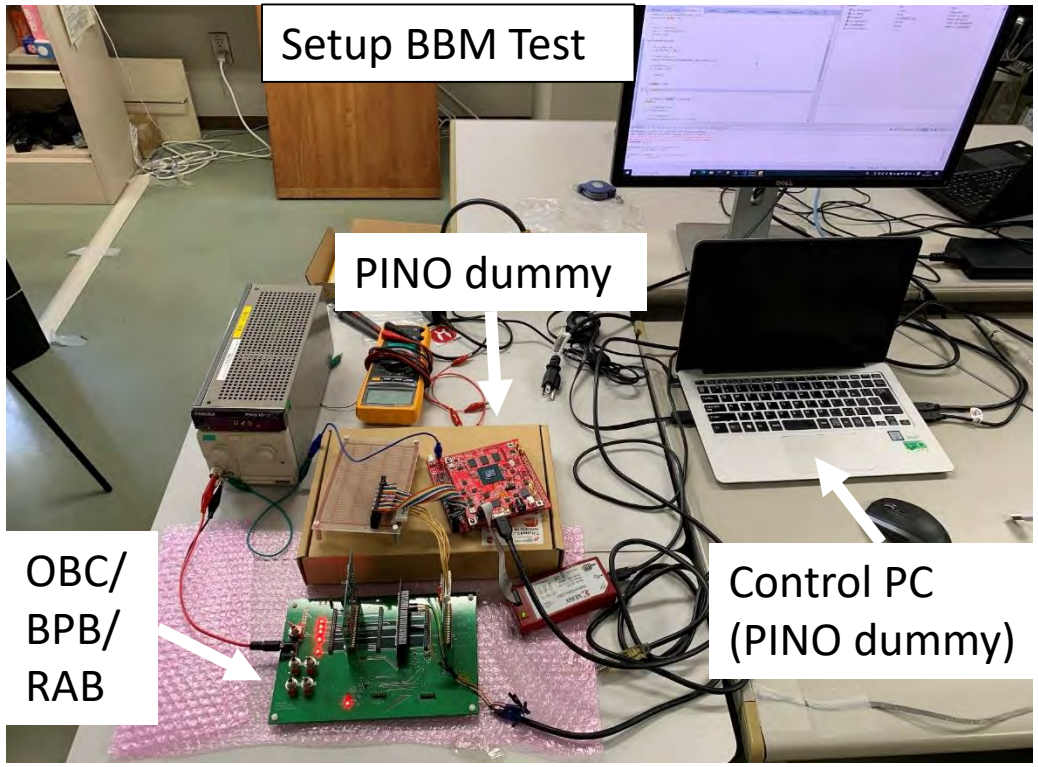
Ryota Onogi
and PINO team
4 June 2021

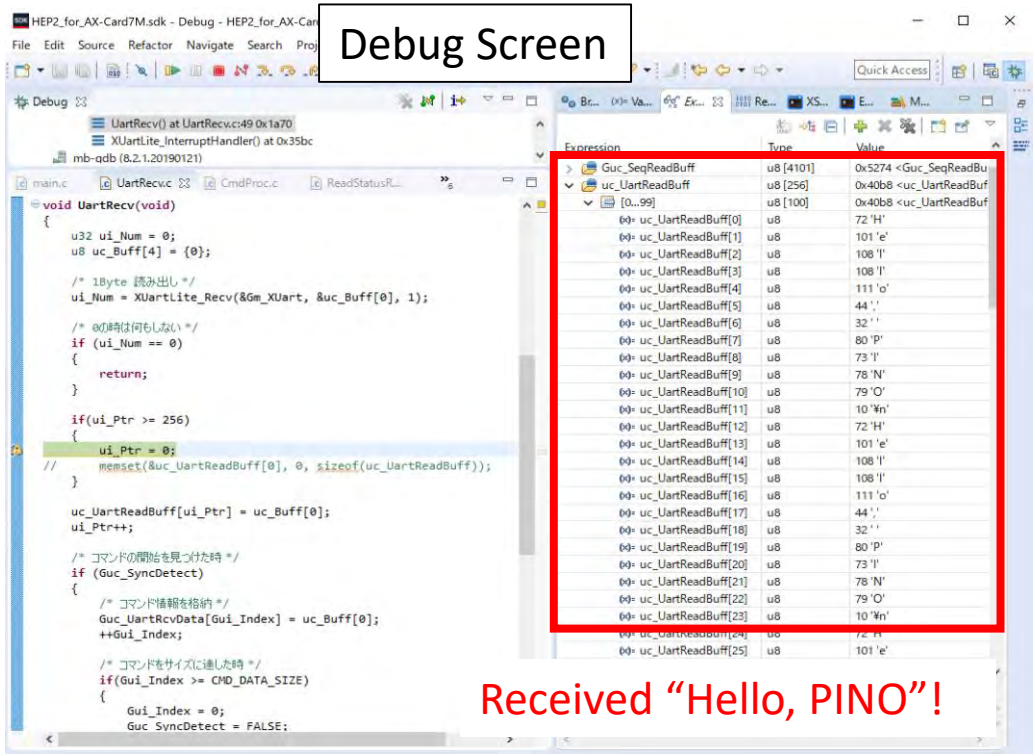
PINO development is going smoothly!!

We have finished the communication test.(OBC↔PINO)

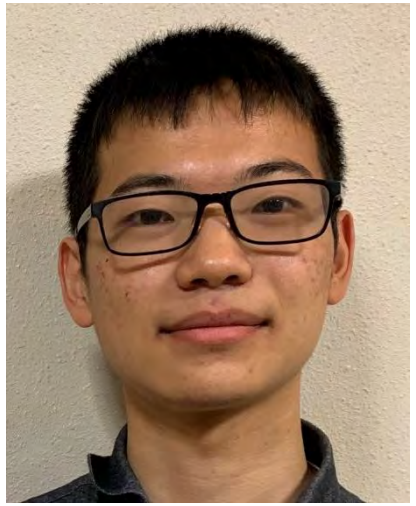
- ➢UART communication: OK!
- ➢Read/Write/Erase the flash memory on the OBC via SPI: OK!

We started to develop the PINO software for EM.





About the API



By: Yukihisa Otani

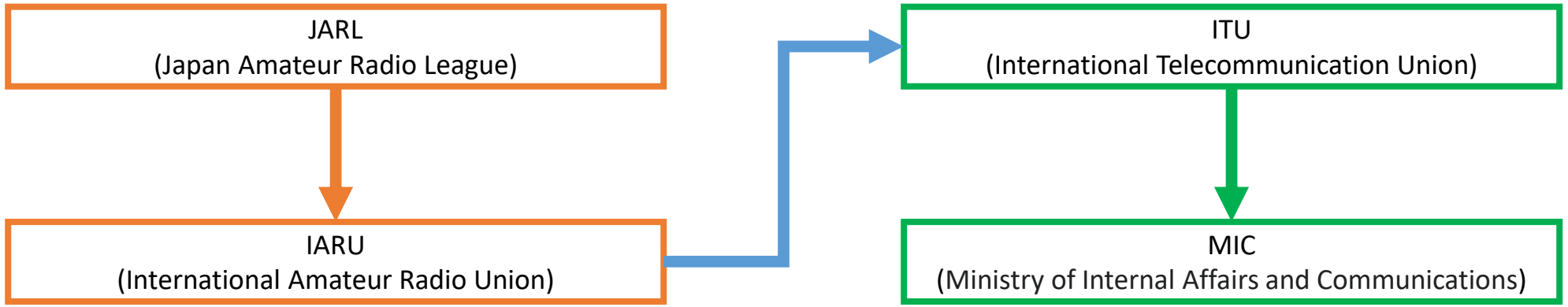
Jun/16 2021

What is API (Advance Publication Information)? Here, the ITU explains it.

https://www.itu.int/en/ITU-R/space/Pages/API.aspx

Advanced Publication Information (API)

- API is the one document allowing to use the frequency for BIRDS satellites.
- API is submitted to the International Telecommunication Union (ITU) via the Minister of Internal Affairs.

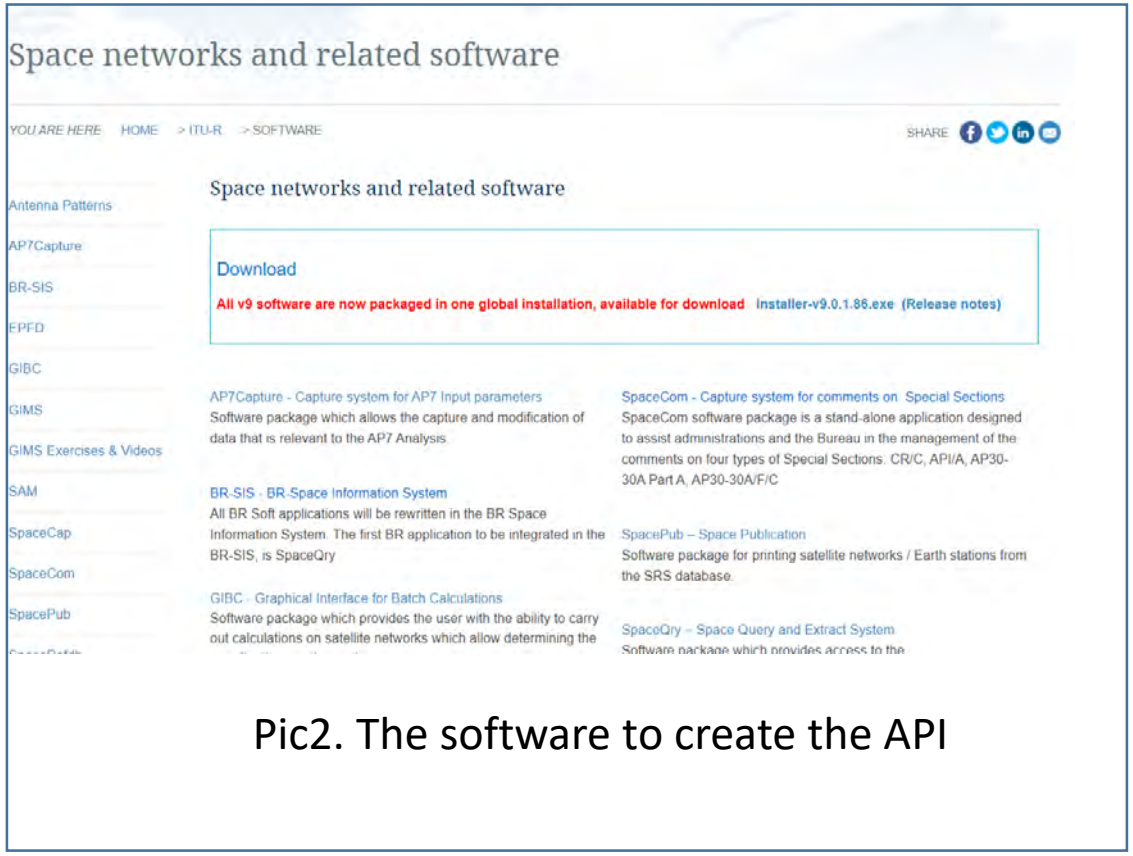


Pic1. The flow for frequency coordination

How can we create the API?

- ITU provides some software to create the API.
  1. GIMS-Graphical Interface Management System
     →To create the picture data attached on the API.
  2. Space Capture
     →To make the API.
  3. BR-SIS Validation – BR Space Information System
     →To verification the API
  4. Space Pub-Space Publication System
     →To output the data we can read
- Anyone can get them at :

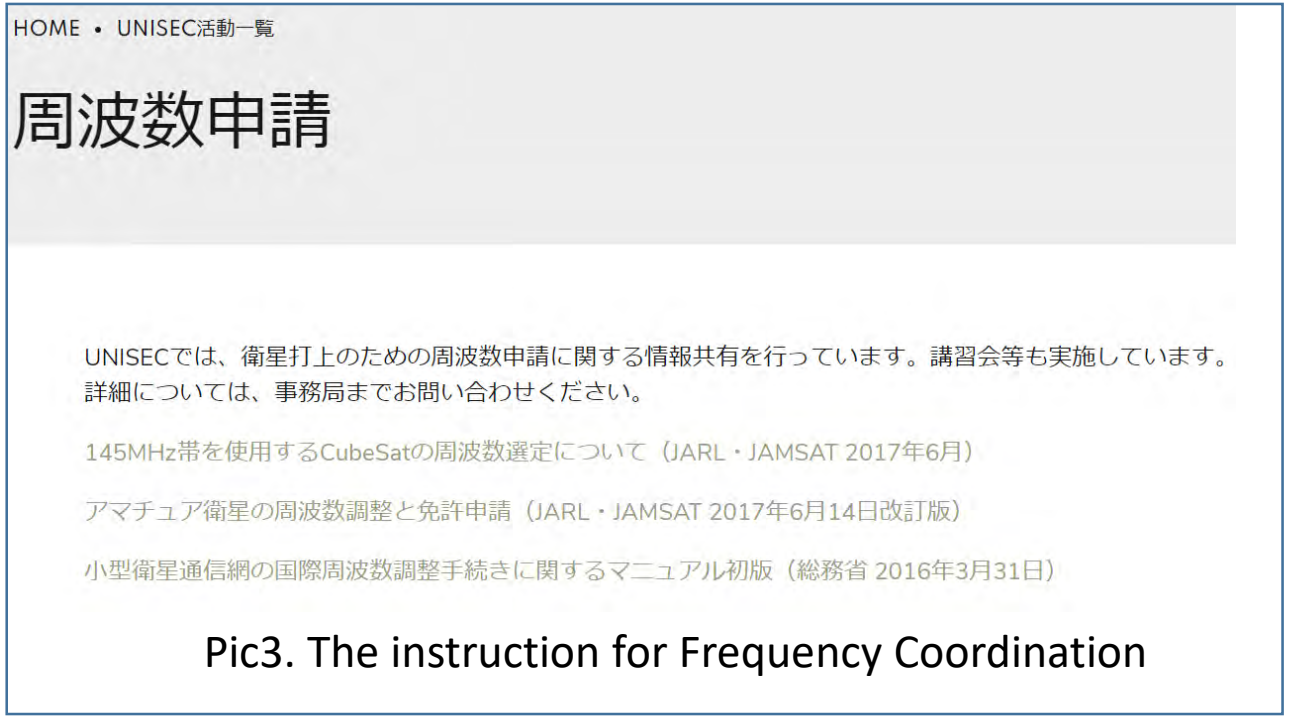
https://www.itu.int/ITU-R/go/space-software/en



Pic2. The software to create the API

How can we create the API?

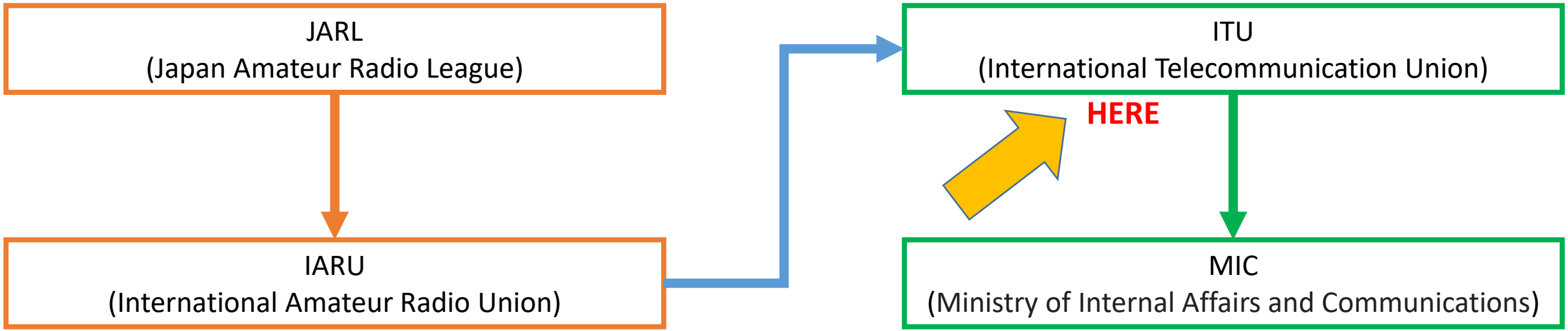
- There are instructions at the UNISEC Home Page.
- It is very clear and easy for us.
  (However, it is written in Japanese. If you need the help, I can help you !)



Pic3. The instruction for Frequency Coordination

At which phase is BIRDS-5 currently?

- We have received the IARU Coordinate letter.
- I am currently creating the API.
  (In the case of Japan, the experience plan documentation is needed.)



Pic4. The flow for frequency coordination

END OF UPDATE ABOUT BIRDS-5 API

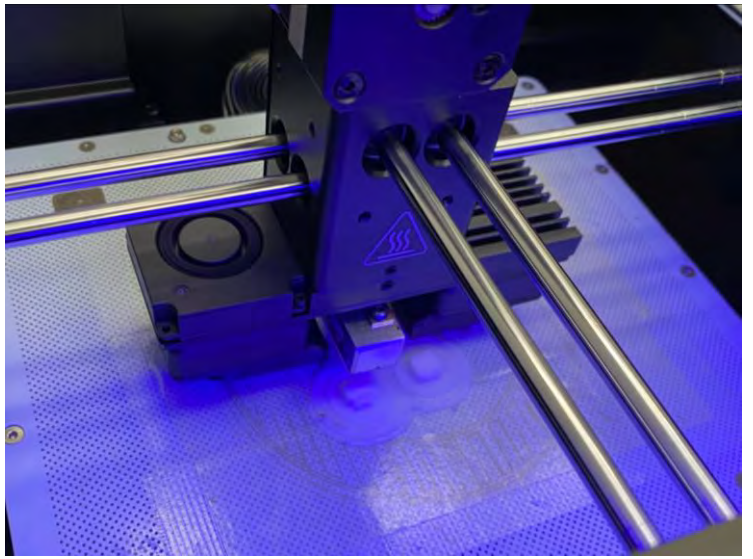
2U STR reception

By : Takashi Oshiro

2021/June/9

Manufacturing

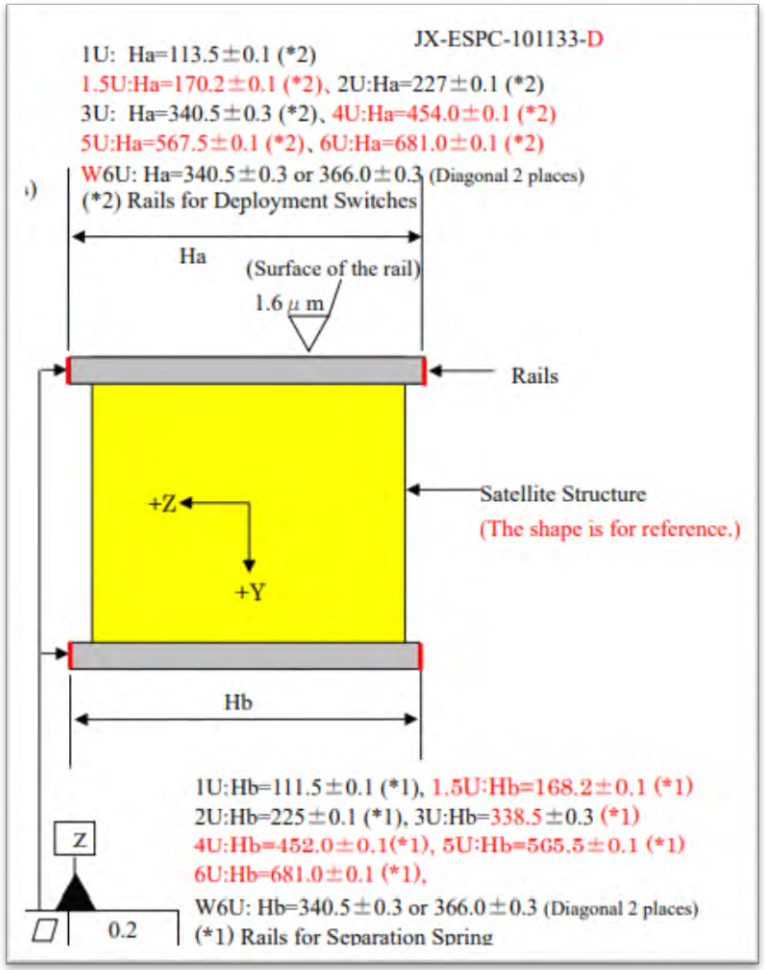
- CubeSat is composed of many parts. There are mechanical parts (frames, screws, nuts, spacers, washers, part holders and so on…) and electrical parts (PCBs, cameras, transceivers etc.)
- Sometimes we buy these components, and some other times we ask a company or the university factory to manufacture them or other parts that we need.
- Ordered parts cannot be manufactured within 1~2 days usually. It takes around 1 month or more. Structure team has to plan and prevent with plenty of time.



http://www.mech.kyutech.ac.jp/factory/index.html

Manufacturing

- Structure team often make mechanical drawings of satellite parts even for other subsystems.
- Dimensional requirements must be managed and properly mentioned in the drawings.
- In the JAXA accommodation handbook, Dimensional requirements are reported.



(2) A 1U to 6U type satellite shall be 100+/-0.1 mm wide in X and Y per Figure 2.1.2-1.
(3) A 1U type satellite shall be 113.5+/-0.1 mm tall in Z per Figure 2.1.2-1.

(3) The rails shall have a minimum width of 8.5 mm.

Source : JEM Payload Accommodation Handbook from JAXA

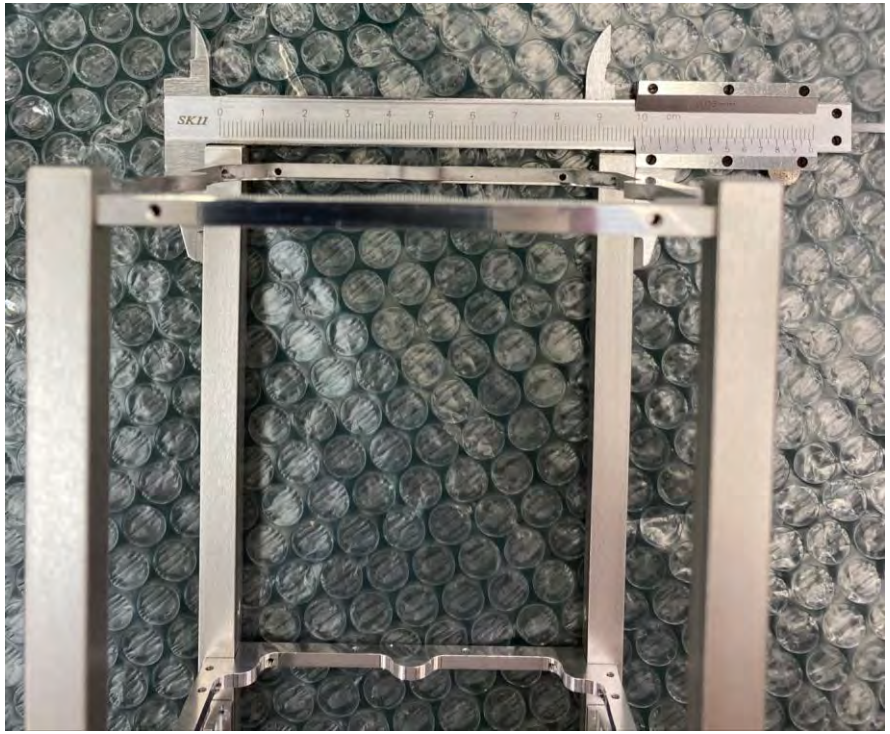
Ordering the 2U structure

- For EM structure, we ask a manufacturing company to make it because good precision is required. The ordering schedule for the 2U structure is shown below:

Date	Process
4/6 ~ 4/19	Drawing check by professor and modification
4/20	Sending drawings to the manufacturer
4/20 ~ 5/27	Drawing check and manufacturing
5/28	Sending mechanical fasteners to the manufacturer
5/28 ~ 5/31	Assembly check
6/1	Satellite hand over

2U structure reception

- After we receive the structure, we conduct a dimension measurement test.



END OF THIS SECTION

- We will do the integration test with electronic parts, then check the functionality. After that we can proceed to conduct environmental testing…

Deployment Switch Screening

By : Derrick TEBUSWEKE

Date: 16th June, 2021

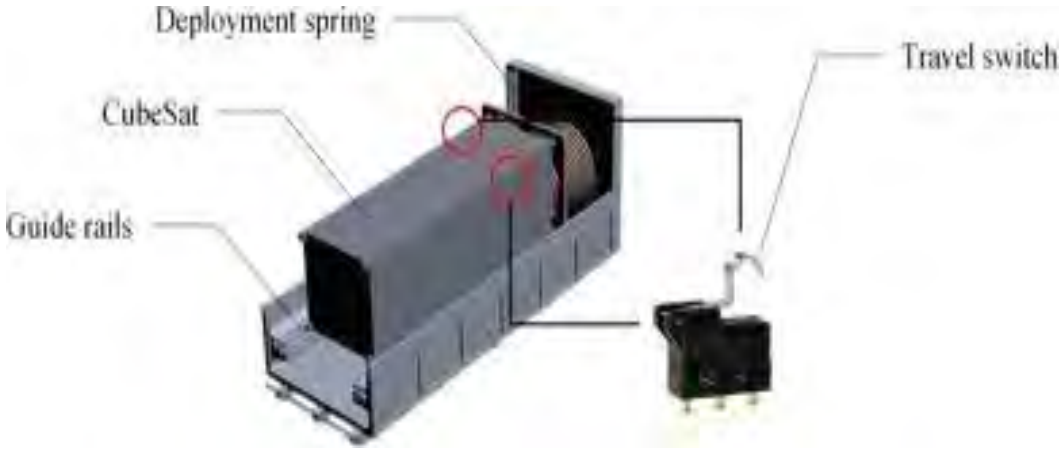
BIRDS5 Deployment Switches

Deployment switches. These ensure that all CubeSats are inactive during **launch** and pre-**launch** activities.

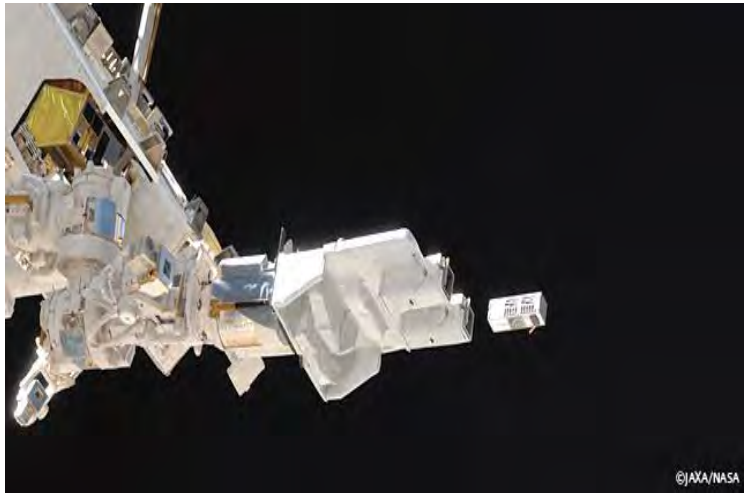
These isolate power supply lines and Ground before deployment, and switch them ON after deployment, by enabling connected MOSFET Switches.

BIRDS5 Satellites shall have 3 mechanical deployment switches.

End-Rail Switch
© google



JPOD Cubesat Deployer aboard ISS
© sciencedirect.com

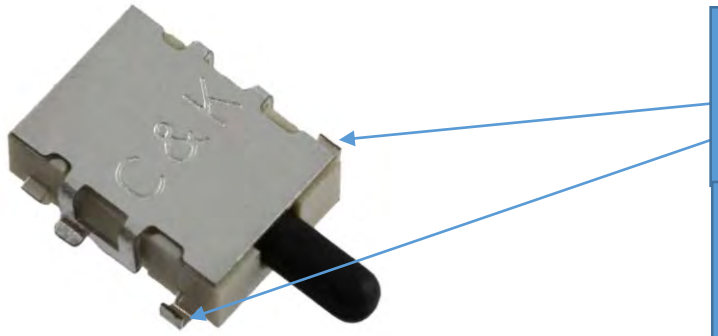


Cubesats Deployment from ISS
© JAXA/NASA

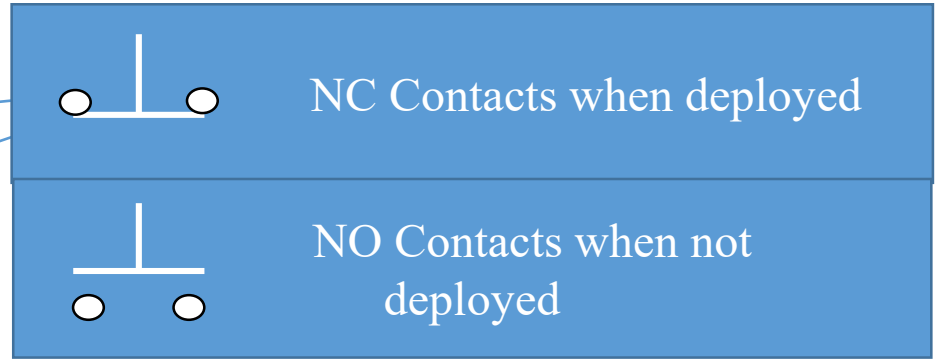
JAXA Requirement on Deployment Switches

Screening Tests Done:

- Stroke Screening Test
- Switch Spring Force Measurement

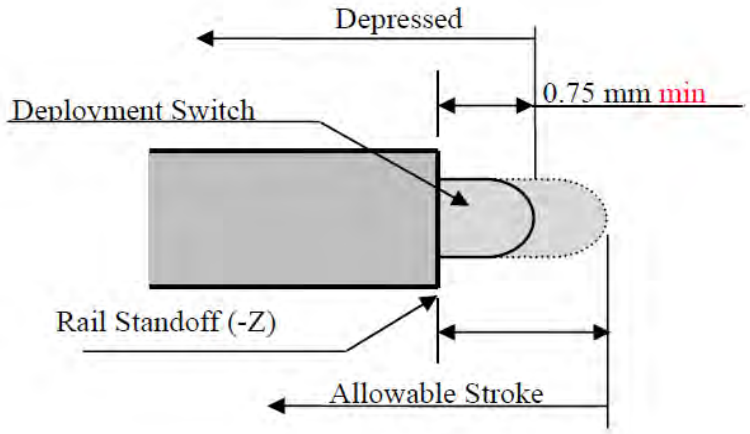


SDS002R End-rail Switch



Stroke Screening Test;

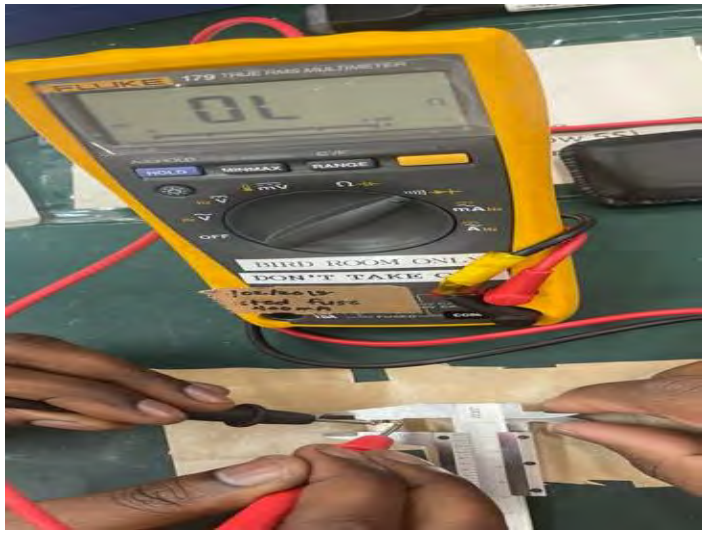
Objective: To prove that the Maximum Allowable Stroke of Deployment Switches is not less than 0.75mm

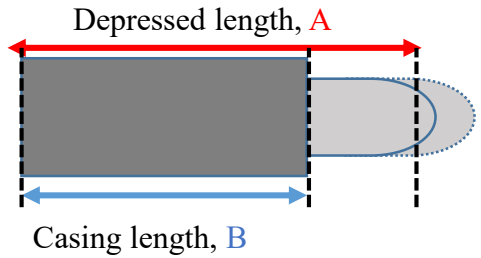


Stroke Screening Test

Approach: To measure the Depressed length with a Vernier Caliper and check status of switch (ON/0FF) with a multimeter.

Use the vernier caliper to push switch until it opens the circuit





Maximum Allowable Stroke = A - B

Stroke Screening Test Results:

All the 10 screened switches passed the Stroke Test.

Switch #		Depressed Length A (mm)	Switch Casing Length B (mm)	Maximum Allowable Stroke (A - B) ≥ 0.75mm	Status
1	0	7.6	5.7	1.9	Passed
2	0	7.7	5.7	2	Passed
3	0	7.7	5.7	2	Passed
4	0	7.7	5.7	2	Passed
5	0	7.7	5.7	2	Passed
6	0	7.7	5.7	2	Passed

Spring Force Test

Requirement: The total spring force of the separation spring and deployment switches shall be between 1.08 to 5.3N

Calculation of spring force from weight measurements:

1 gf = 0.00980665 N

$g = 9.81 ms^{-2}$

$$F = weight \times 0.00980665\ N$$

Switch	Depression force [gf]	Return force [gf]	Resistance Ω
1	36.3	15.81	0
2	35.50	20.08	0
3	35	18.16	0
4	32.5	15.87	0
5	32.4	21.52	0
6	30.5	9.15	0

Spring Force Test Results

Results: JAXA Requirements state that total Return Force of all spring switches should be between 1.08N to 5.3N range. But The Springe Plunger Force is 0.6N. Hence The Real Total Return Force of the three switches minus the springe plunger is 0.48N, meaning each switch should have a Return Force of 0.16N and above.

Way Forward:

We shall continue screening more switches until we achieve the JAXA requirement.

Switch	Depression force(N)	Return force (N)	Resistance Ohms	Status
1	0.35	0.15	0	Failed
2	0.34	0.19	0	Passed
3	0.35	0.17	0	Passed
4	0.31	0.15	0	Failed
5	0.31	0.21	0	Passed
6	0.29	0.09	0	Failed

END

Jackets are up !
everyone can order !

By : Fukudome Shoma

2021/06/04

ABOUT TEAM JACKETS

BIRDS-5 team consists of students from five countries:

- **Japan**
- **Uganda**
- **Zimbabwe**
- **Morocco**
- **Trinidad and Tobago**

BIRDS-5 team have ordered our team jacket with each national flag on the left sleeve.

About 30 people have already bought team jackets for BIRDS-5 !!!

BIRDS-5 TEAM JACKET DESIGN

Know About Morocco!

By : Fahd MOUMNI

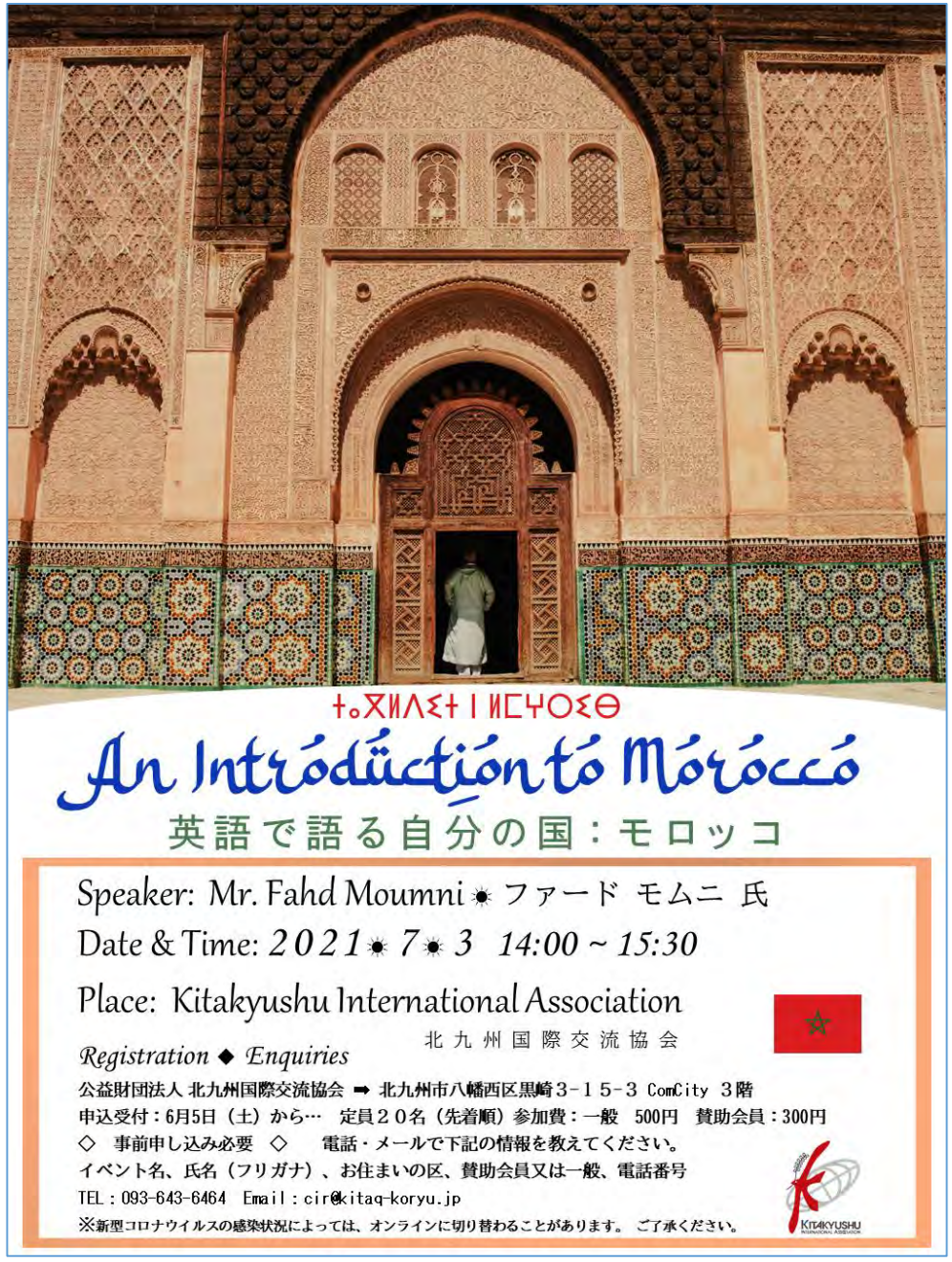
17 June 2021

Announcement !!

Poster → designed by Mr. Sriram Rajaram

- On the 3rd of July, I will be introducing Morocco, in English, at the Kitakyushu International Association.
- It will be a Saturday, between 14:00 to 15:30
- I will share all what I want you to know about my country so be fast in getting the tickets !!
- The price is 500 yen, the maximum number of people allowed is 20.
- The Kitakyushu International Association can be found in the COMCITY Building stopping at Kurosaki train station.

https://www.kitaq-koryu.jp/en/topics/event/an-introduction-to-morocco-registrations-open.html



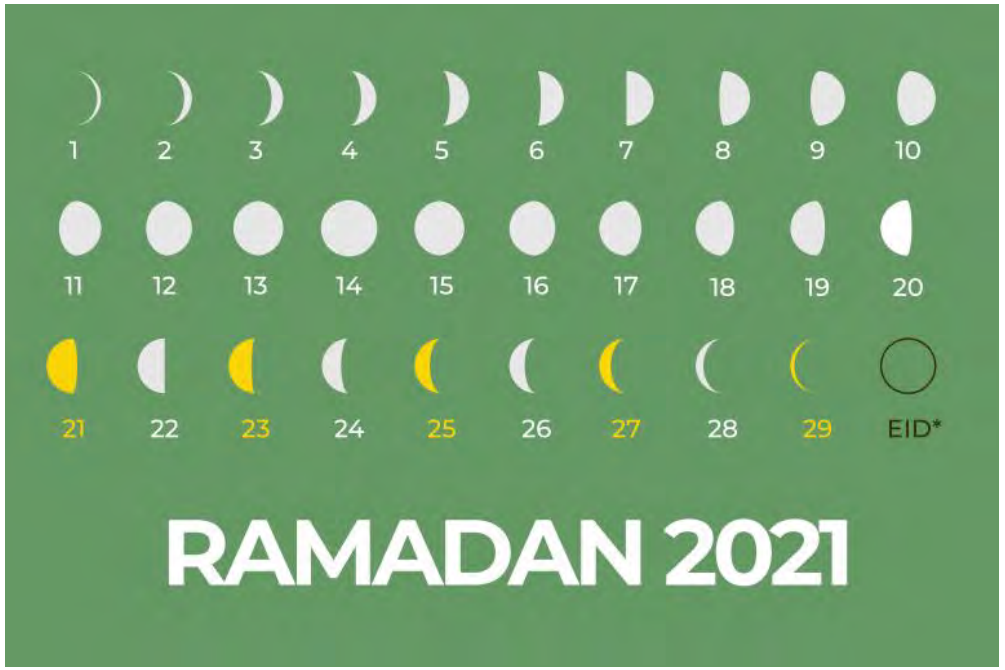
Eid Mubarak from Japan !

By : Fahd MOUMNI

17 June 2021

The context

- From mid-April to mid-May, we observed the month of Ramadan.
- During Ramadan we fast from sunrise to sunset and try to become the best versions of ourselves in many ways.
- At the end of the month we celebrate the Eid (12 May this year).
- In Morocco, we like to wear our traditional attires…so that was a good opportunity to share my culture with the BIRDS-5 members but also other Kyutech students and sensei's !



Our calendar is a lunar calendar and each month is observed according to the moon sight

Source : https://www.aljazeera.com/news/2021/4/6/when-is-ramadan-2021

Pictures !!!

- We start the Eid with a very sweet breakfast, some tea, coffee also, dates, pastery etc…and always with family around or friends (with social distance of course !)

- The rest of the day is quite free, but we usually use it to visit family.

Tables are more filled than that…but this is quite a lot for a student budget !

Oriental sweets

Moroccan Traditional Clothes

- Then talking about Moroccan traditional clothes :

1. On the head : the Moroccan “Tarboush” or the “Fez” (same name as the city of Morocco)

2. As a unified robe (yellow) : The Djellaba. Many djellabas can be found but the model and the color you see is for special occasions (ambassadors wear it on diplomatic events !!!)

3. Inside the djellaba : A typical white shirt or “Kamija” and a ‘saggy pants’ called “Seroual Kandresa” (not visible on the picture). The white being a symbol of purity.

4. The shoes (not sleepers !!): The famous “baboush” or “belgha”. The yellow one is the most classical, reminding the color of the sun and made in the most traditional city of Morocco, the city of Fez !

More Pictures !!!

- The good thing with Kyutech is that the campus is so beautiful, you can find many nice backgrounds to take special pictures…but it’s up to you to find a good photographer !!!




More Pictures !

In front of the old exposed machines in the Campus

At the Campus Main Gate

With Ramson, BIRDS-5 COMMS team leader, in front of the SVBL (Satellite Venture Business Laboratory)

With Victor, BIRDS-5 Project Manager

With Otani, Keenan and Oshiro (from left to right) at Sushiro スシロー!

END OF THIS SECTION

The FSSC (Foreign Students Sports Circle)

By : Fahd MOUMNI

17 June 2021

Who we are ?

- The FSSC is the official group gathering the foreign students of Kyutech for the extracurricular sporting activities.
- As the Department of Space Engineering hosts most of the foreign students, the main members of the club are coming from it.
- The group has always been composed exclusively by foreign students BUT since 2021 we are inviting Japanese students, therefore, **ANYONE**, to be part of our activities !!
- Our LINE Group has now reached 45 people !!!

An early picture of the group at the Hiagari football pitch

What we do

- We have the right to practice all sports we want within the university as long as we are coordinating our schedule with the Student Section and other circles.
- We mostly play football (futsal if it is indoor), but we have partnered with the Basketball group “Kenichi FadeAways” (with only Japanese members and who were very welcoming) to fulfill the need of our basketball players !
- Out of a pandemic we also have access to the training room for whoever likes to lift some weights and train his muscles to get that summer body !

With the Kenichi FadeAways

Why we do it ?

- Sports are essential in everyday life to keep our sane spirit in a sane body.
- But Sports can also be used for so many other purposes : One of them is to promote the communication between locals and foreigners. Many Japanese people are now happy to have foreign friends and international students are happy to get Japanese friends while having fun.
- Usually the opportunity does not present itself because of the language barrier, but creating this chance lets no excuse to whoever wants to enhance his language skills or know more about the other.
- The main objective of the FSSC is to HAVE FUN ! Thanks to that, everybody is able to MAKE FRIENDS !
- After the pandemic, the group plans to have some outings to reinforce the (already) strong links between members

FSSC is just about Having FUN !

How we do it ?

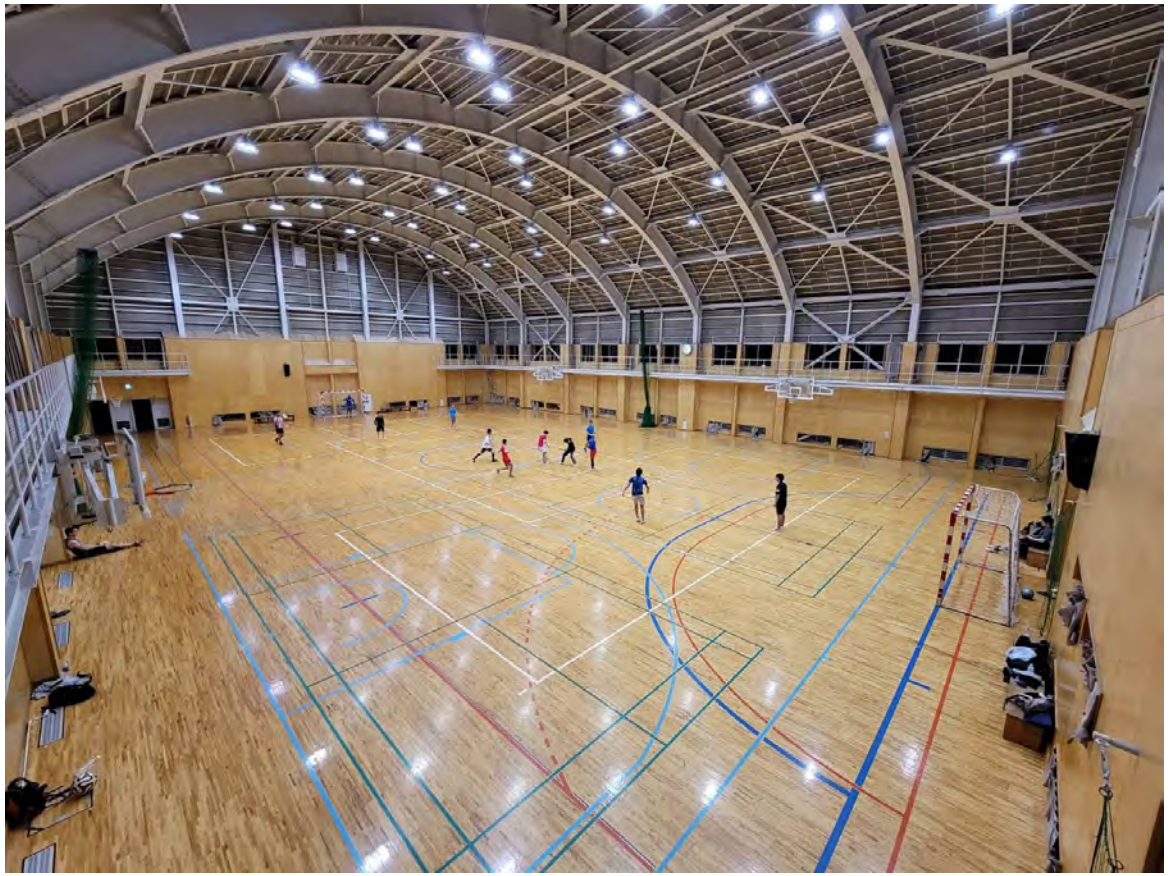
- First, the leader, I, have to make the reservations one week before the beginning of the new month.
- Slots are allocated with priority given to the clubs with more “higher athletic level purposes”.
- Members are asked each week if they are attending or not to see if the session is kept or canceled.
- As we are holding the session, and during the pandemic, all members are exhorted to send a picture of their thermometer with their body temperature, a screenshot of their COVID tracking app called COCOA, and bring a mask and indoor shoes.
- After each session, all members help in cleaning and re-ordering the materials used for the activity.

The group is so diverse and we like that !

When and where ?

- At the main gymnasium of our university, every Sunday from 19:00 to 21:00 !

Not smiling after a session is impossible !



Be the master of the futsal court !

When and where (2) ?

- The gymnasium is quite big !!

How to join us ?

- Through Instagram : https://www.instagram.com/kyutech_fssc/
- Through LINE :

- Through e-mail : moumni.fahd655@mail.kyutech.jp
- Or by asking the Student Section of Kyutech !
- If you are not sure about how it can be, watch this video (in Japanese)!! : https://www.youtube.com/watch?v=fzAvK4uYl_I

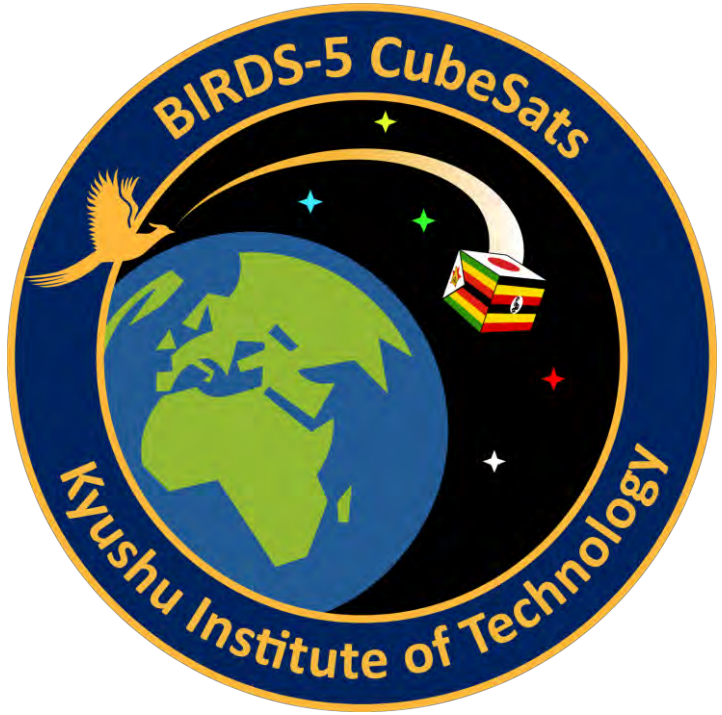
END OF THIS SECTION

End of BIRDS-5 reports for this month.

Thanks to Fahd for the compilation work. We are searching for his replacement as he graduates at the end of this summer. He will be missed a lot.

Fahd: Thanks for handling the BIRDS-5 articles since last summer.

- Editor



End of this **BIRDS Project Newsletter**

(ISSN 2433-8818)

Issue Number Sixty-Five

This newsletter is archived at the BIRDS Project website:
http://birds1.birds-project.com/newsletter.html

When a new issue is entered in to the archive, an email message is sent out over a mailing list maintained by the Editor (G. Maeda, Kyutech). If you wish to be on this mailing list, or know persons who might be interested in getting notification of issue releases, please let me know.

This newsletter is issued once per month. The main purpose of it is to keep BIRDS stakeholders (the owners of the satellites) informed of project developments.