WUSAT Newsletter

January 2019

University of Warwick Satellite Engineering Team 2018-19

2019 – Big Year for WUSAT?

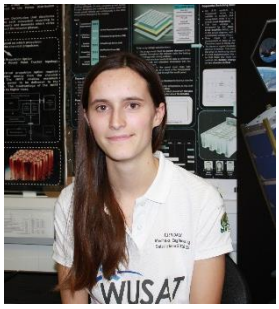
WUSAT is increasingly gaining recognition as a unique educational satellite engineering programme. A number of developments in the coming year could see WUSAT involved in some exciting new ventures for the benefit of our student team members and our many collaborating partners. See items below for detail!

WUSAT / Airbus Collaboration!

Later this month, the WUSAT team have been invited to visit **Airbus** at their Stevenage base in order for us to present our satellite engineering programme and our WUSAT-3 mission. The expectation is that they will become our latest industrial partner, and this will undoubtedly be a significant boost to our future aspirations! We are very indebted to one of our current team members, **Anjali Yadav** (right), who spent time last year as in intern with Airbus, and has used her contacts to arrange this visit for us. This is a day we are all very much looking forward to!

European Space Agency selects WUSAT again!

WUSAT team members are being selected for ESA training programmes at a level that continues to suggest that ESA are very keen on our current WUSAT-3 satellite mission. **Ellen Daly** (left) and **Hamish Fothergill** (centre) have been selected to attend ESA's Concurrent Engineering course associated with the ESA programme designed to send WUSAT-3 to the International Space Station. In recent months, a total of five WUSAT students have been chosen for this prestigious programme – quite remarkable considering only 30 are selected from the whole of Europe! A third student **Diella Agyemon** (right) has been selected for ESA's Satellite Communications course in February. Diella is currently working on WUSAT-3's communications systems (payload and telemetry/tele-command), and this will be a wonderful opportunity for her to learn more about this crucial but difficult subject.



They are all a great advertisement for Warwick Engineering!

Dr Bill Crofts & Prof Julia Hunter-Anderson, Co-Directors of the WUSAT Programme, www.warwick.ac.uk/cubesat

WUSAT / Warwick Aerospace Society CanSat Team

Following discussions with the **University of Manchester**, WUSAT agreed to form a new cross-department team that would take part in a newly devised CanSat competition for 2019. Emulating the highly successful International CanSat competition held annually at the University of California in the US, Manchester have devised a similar challenge for UK University teams and were keen for WUSAT to take part.

A CanSat is a simulation of a real satellite, integrated within the volume and shape of a soft drink can. The challenge for students is to fit all the major subsystems found in a satellite, such as power, sensors and a communication system, into this minimal volume. The technical performance specification it must meet is highly demanding. It is an ideal proving ground for aspiring Space Engineers.

It was not possible for WUSAT to run the team on its own, so it was an opportunity for us to collaborate with the **Warwick Aerospace Society (WAS)**. WAS recruited a team of seven members, and WUSAT Directors, Dr Bill Crofts & Prof Julia Hunter-Anderson, will act as Faculty Advisors. The CanSatMCR team will operate as a Warwick Aerospace Project run through WUSAT. WUSAT partner company **RS Components** have already indicated they are willing to support the new team as an extension to their WUSAT link. The CanSatMCR team are….

Jenni French (Team Leader - Physics)
Isaac Sturm (Engineering)
Kothari, Akshay (WMG)
Makerov, Maksim (Engineering)
Stinson, Paul (Computer Systems)
Ross Taylor (Maths/Physics)
Worrall, Archie (Engineering)

Image copyright: European Space Education Resource Office (ESERO)

We are delighted to be working with the Warwick Aerospace Society on this. Many thanks to **Tom Syndercombe & Michael Kaniou** of WAS for their assistance in helping us put it together. It is our first venture into a cross-department activity, and we look forward to seeing this as a successful annual event!

AMSAT-UK to Collaborate with WUSAT

Thanks to **Emma Willis** (Warwick Conferences), Bill & Julia were recently invited to a meeting with **Barry Sankey** of **AMSAT-UK**. AMSAT-UK represents the amateur satellite community in the UK whose members not only operate amateur satellites but also help to design, build and fund them.

Satellite radio communications is a crucial technology for WUSAT, so we were extremely pleased that Barry was so positive about the possibility of future collaboration between us.

WUSAT to Host 2nd Meeting of Midlands Space Group

The University of Leicester has plans for an £80m Space Park on a 9.3-acre site adjacent to the National Space Centre. This facility could eventually create 2,500 jobs and boost the regional economy by over £700m.

Last September WUSAT Directors Bill & Julia attended a first meeting of a group of Midlands Universities who have either Space heritage or research that can lend itself to Space technology requirements. Organised through the auspices of the **Midlands Innovation**, the meeting was called by **Prof Martin Bairstow** (Leicester) with a view to forming a Midlands Space Group who could benefit from shared facilities in the new Space Park, and could promote **low-cost launch capability** from a Midlands base. The group of universities included Leicester, Warwick, Birmingham, Aston, Loughborough, Cranfield, and Nottingham. It is likely that, eventually, Midlands companies with Space heritage will also join the group to make a significant Space 'cluster' in this region.

The prospect of forming such a consortium of local partners to enhance and enable low-cost launch technology in this region was certainly of great interest to us, and we are very pleased to host the second meeting of the group at Warwick later this month. Watch this Space as they, sort of, say!!

WUSAT Technology to Assist Prevention of Illegal Wildlife Poaching?

Through our contacts at **Satellite Catapult**, we were invited to attend a first meeting of a group of ecologists and technologists at The Royal Aeronautical Society HQ, London.

The aim was to pursue a government initiative to merge the needs and wildlife-tracking experience of ecologists with the possible solutions that could be offered by technologists.

The payload of our current mission (WUSAT-3) is designed to track miniature wildlife tags, more suited to small birds, etc. However, there is no reason why the technology could not be used for any wildlife monitoring, including Rhino and Elephant. We would be only too pleased if it can! We were flattered to be invited to this meeting and we wait to hear if further developments may materialise. It is further evidence of the growing awareness of WUSAT in the wider Space technology community.

Dr Bill Crofts & Prof Julia Hunter-Anderson, Co-Directors of the WUSAT Programme, www.warwick.ac.uk/cubesat

RS Components make Promotional Video with WUSAT!

Late last year we were visited by **Tracey Taylor** of **RS Components**. She brought with her an RS video production team who were going to spend the day taking video clips of the WUSAT team (in formal and informal mode) for the purpose of making a promotional video.

RS (and Tracey!) have supported us since our very beginning in 2006, and the video is primarily to show how important their partnership with us has been. Of course, it will serve just as well as a promotional video for us, and in using it we are also promoting RS.

This is in the nature of all of our relationships with partner organisations, that we always strive to see how we can provide mutual benefit to both parties. We look forward very much to seeing the finished version of the video. The image of the current 2018-19 WUSAT team (below) was taken on the day when RS were filming. We are fortunate once again to have a team of top-class engineering students who are progressing the development of WUSAT-3 in a number of important areas (see key below image). They are a credit to the department and everyone who has taught them!

Back Row (L-R): Prof Julia Hunter-Anderson (Co-Director), Ken Diep (Electrical Power Supply), Michael Kaniou (Mechanical Space Mechanisms), Ellen Daly (Mechanical Structures), Dr Bill Crofts (Co-Director)

Front Row (L-R): Diella Agyeman (Space Communications), Anjali Yadav (Manufacturing Quality & Product Assurance), Hamish Fothergill (Satellite Orientation Control Mechanisms), Kulan Gunawardena (Electronics Systems Engineering)

WUSAT makes Space Proposals for the British Science Festival 2019

The **British Science Association** and **University of Warwick** have announced that the **British Science Festival** in 2019 will take place in Coventry and Warwickshire, from 10–13 September.

Joining forces with the University of Warwick and other organisations across Coventry, the British Science Festival will shine a light on the cutting-edge innovation taking place in the region. It will also be a milestone event for the **City of Coventry** in the run-up to its **City of Culture** year in 2021.

WUSAT has proposed an exhibition stand to highlight the satellite work that we have been involved with for the past 13 years at the University of Warwick. We are extremely pleased to announce that **RS Components** have offered to assist us in this by making available their **Titan II Technology Truck** (image below).

Titan is packed with modern technology of the sort that is used in various ways to model, simulate or develop Spacecraft Technology. Not only that, but its designed to be interactive (i.e. you can play with it!).

This is a hugely generous offer from RS and we are in discussions with Festival organisers at Warwick who will decide how we can best use this wonderful facility in collaboration with WUSAT's exhibition.

Our understanding is that there will be a general Space exhibition that will include research work from other Warwick departments. We will report later on how this pans out, but we are very pleased to be able to offer such a contribution in support of Warwick's role in this Science festival.

Thanks to everyone who has supported us in whatever way.

More to come in the next edition !

Dr Bill Crofts & Prof Julia Hunter-Anderson, Co-Directors of the WUSAT Programme, www.warwick.ac.uk/cubesat