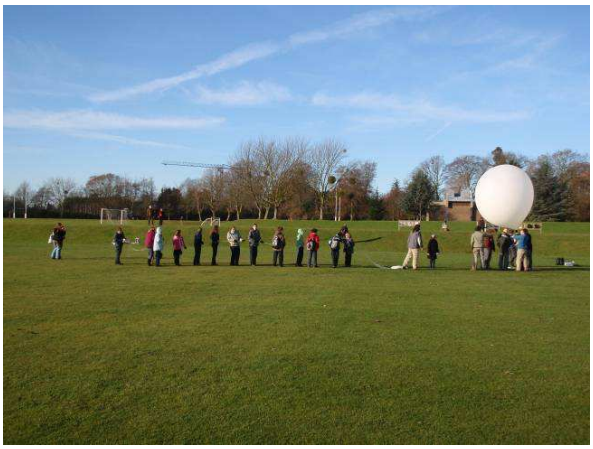
Project Update

Over the last few months the Cambridge University Spaceflight team has reached the international press with its outreach experiment to launch teddies into space, and has tested its first concept rocket at supersonic speeds. Several of the many recent activities are highlighted below.

Nova 9 - "Teddies in Space"

Nova 9 was designed as part of the CU Spaceflight outreach program, to give schoolchildren an experience of designing projects for the space industry. The project was with the science club at the local Parkside and Coleridge schools, a group of 12-14 year olds. The experiment they designed was to investigate space suit design; how different materials can be used to provide thermal protection in the extreme cold of space. Temperatures would then be monitored and recorded throughout the flight by the flight computer designed by the CU Spaceflight team.

Right : "Teddies in Space", a photo reproduced throughout the national and international press, and websites worldwide.



The launch was a great success, with the balloon reaching just over 30km altitude and some of the bears reaching -53 °C! The launch generated huge press coverage for the team and sponsors, with stories appearing in almost all of the major newspapers and news websites in the UK, with radio coverage across the country and on the BBC world service. The international press was reached as well with television stations such as Sky News, Discovery Channel and ABC (Good Morning America) to name but a few. The launch has also inspired many other schools and amateurs to attempt similar experiments, and the team has given advice to many interested parties from across the world.

The balloon launch was tracked using the new, custom designed balloon tracking software which decodes radio, tracks balloon and chase vehicles, and updates predicted landing co-ordinates in real time. Despite having travelled 70km along the ground and 30km altitude the chase team were waiting in the field to see the payload land.

The UK Space Challenge 2009

As part of the University of Cambridge's 800th Anniversary celebrations the Cambridge University Spaceflight team is continuing to run the UK Space Challenge 2009. This national competition is aimed at teams of science students aged 14-18, or Science Clubs and Youth Clubs. The challenge is to build an innovative scientific experiment that will be taken as a payload to the edge of space by a CU Spaceflight high-altitude helium balloon.

Twenty five teams from across the UK have entered the competition, and seven have continued to the second round. The experiment concepts range from determining the speed of sound variation with altitude to bacterial collection and radio reflection from meteorite scatter in the upper atmosphere. The best five teams will soon be chosen to have their experiments flown over the next few months.

Martlet 0

The CU Spaceflight team is working hard on the Martlet project to design and launch a small rocket from a balloon platform into outer space (100km+). The low air density environment at high altitudes allows for rocket flight with much less drag than at ground level, allowing for suborbital flights to outer space for small payloads with minimal fuel cost.

The team has started building prototype parts for the Martlet program, and has invested much of its time in developing techniques for the efficient manufacture of rockets using composite materials. Recently, a rocket concept, Martlet 0, was test launched from ground with a commercially available 'J-class' rocket motor.

Martlet 0 was equipped with:

- One-piece carbon fibre airframe made from low resin content pre-preg (supplied by Hexcel composites) in an industrial standard autoclave.
- In-built Kevlar recovery harness
- Dual parachute recovery
- GPS and radio tracking

Martlet 0 reached almost 9,000ft and a maximum velocity of the speed of sound (760mph), with a motor with less than one third of the power that it was designed for. If Martlet 0 had been launched from a site with no altitude restrictions the flight would have reached around 14,000ft+ and 1400mph with a commercial 'L-class' rocket motor.

Sponsorship

CU Spaceflight is reliant on the generosity and forward thinking of its sponsors, and the project has been steadily receiving support as it gains momentum. The team are currently attempting to raise the budget to allow the project to continue this summer, and hoping to fund the first rocket space-launch campaign. The team would like to thank all of our sponsors for their continued assistance, whether in financial support or in kind.

As ever, we would be delighted to discuss further collaborations between the Cambridge University Spaceflight project and industrial partners. Further information can be found through our website www.cuspaceflight.co.uk or please feel free to email cuspaceflight@cusu.cam.ac.uk .