Rocketry Ideas

Idea #1: 3D Printed Rocket

Previously we have built our rockets using cardboard tube, which is the typical method for rockets of this size class.

We could use 3D printing instead. This gives us the ability to try more complex designs, and produce new copies more cheaply. However, 3D printed material may have a lesser strength to weight ratio compared to our previous method, and so a 3D rocket may have lower performance.

Idea #2: Carbon Fibre Rocket

We could attempt to build a rocket from Carbon Fibre, to achieve a high strength-weight ratio and hence a high performing rocket.

This would be a much more involved exercise than 3D printing a rocket. We would need to use the equipment and skills in the Engineering Department, and probably secure funding to cover the costs involved. However, it would be useful practice for building bigger rockets in future (which would probably need to be made from Carbon Fibre).

Idea #3: Boosted Dart

A boosted dart[1] is a two-stage rocket, where an small, un-powered upper stage is accelerated and then released. For a given rocket motor and choice of materials, a boosted dart is generally capable of a higher maximum altitude than a single stage.

We would need to:

- Simulate the flight of a boosted dart.
- Design a separation mechanism for the dart.
- Build a dart and suitable booster.
- Develop electronics to separate the dart when required, and track its flight.

[1]: http://www.astre471.org/jeff/RandD/bd/bd.html

Idea #4: Camera

Last year we attempted to include a camera in the rocket. This was based around a Raspberry Pi Zero and Camera mounted in the nosecone.

However, we had no method of monitoring if the raspberry pi was functioning, and we found afterwards that the Raspberry Pi had not started up correctly. So no footage!

We could attempt to do this again, using a watchdog timer to automatically ensure the raspberry pi is functioning. We could also improve the mounting position of the camera.