



Astronomy Club, IITK

Summer Projects 2021

Space: The Final Frontier

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Week 1
(Extended)

24th – 31st May, 2021

Overview:-

In week 1 we discussed about:

1. The basic principles of a rocket.
2. Major components of a rocket.
3. Fairing and its requirement on our missions.
4. Separation mechanisms used for fairing deployment or staging.
5. The rocket equations
6. Specific impulse.
7. Basic Aerodynamics of a rocket.
8. Dynamic pressure and Max Q.
9. Brief introduction to the pioneers of Rocketry.
10. Brief intro to rockets from past and present.
11. Single Stage to Orbit designs (SSTOs).

Summary:-

The slides for these sessions can be found [here](#). There were massive confusions regarding supersonic flight and in general the fluid dynamics around a rocket, for the moment you can learn something about flight dynamics from this nice video [here](#), but to get the whole feel of the topic you must wait until you do courses like ESO204. We will also be sharing further resources about this as and when we find them.

You might also require help from MATLAB in the subsequent assignments, a short [tutorial](#) is recommended.

You should also download the [OpenRocket](#) simulator, it is a nice tool to calculate the aerodynamic properties of a small rocket. You can find a tutorial for it [here](#).

This summary is associated with week 1, material for subsequent week will be delivered soon.

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