# Open Internship in the ESA Advanced Concepts Team in 2017
# on
# **Virtual Reality Applications in Space Science**

## Stage topic Description

The ACT has a strong background in the application of Virtual Reality (VR) to space science. This work has produced a virtual walk through of an elaborate ISS model. This model has sparked the interest of various parties within ESA and we have identified multiple extensions that it would be beneficial to add to the model. The candidate will be tasked with implementing these extensions, and updating the program to work with the latest Oculus software. This will involve a large amount of programming, and use of the Unity 3D game engine.

Possible extensions of current application: enhancement of application to make it more robust, and an ability to teleport to areas of the ISS to facilitate quicker tours; linking the program with a free floating platform to create an immersive experience; and to use existing code for computing black hole visualizations, to develop an immersive VR experience of traveling around a black hole.

## Candidate's tasks

- Developing a familiarity of current model of ISS VR program by using Unity 3D game engine
- Updating current ISS model, including: enhancements, customization, adding extensions
- Link existing black hole visualization code with Oculus to produce VR experience.

## The ideal candidate

Mandatory:

- Excellent programming skills (C/C++/C#)
- Experience with Unity 3D game engine

Desirable:

- 3D modelling experience
- knowledge of OpenGL/WebGL/DirectX
- Experience with ROS (Robot Operating System)
- Experience with Oculus and VR headsets

## References

- Erasmus Centre Website
- PyHole GR Raytracing Code