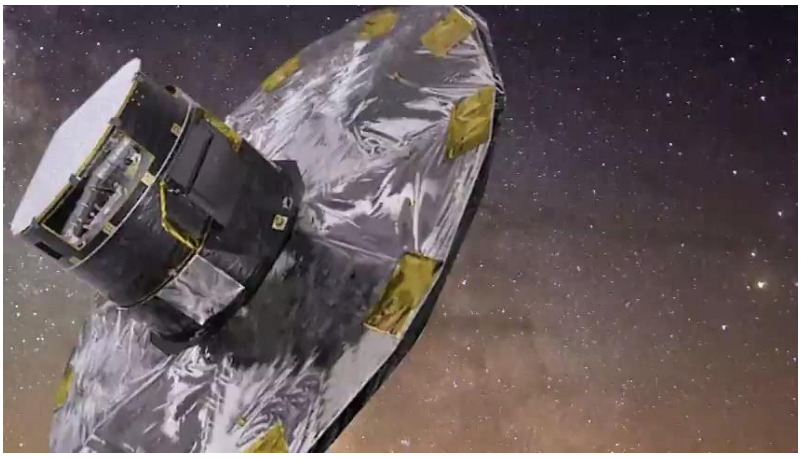
TASC Talk "Gaia Mapping the Galaxy" by Prof. Andrew Norton

Thursday 16th November, 2017

Gaia in Greek mythology represented the Earth and is the ancestral mother of all life. In man's continuing quest to explore and understand "Space the final frontier", the European Space Agency (ESA), back in 2013, launched "Gaia", its five year mission to map one percent of our Galaxy. Gaia's ambitious undertaking is to chart and produce a three-dimensional map of our Galaxy, the Milky Way, in unprecedented detail in the process revealing the composition, formation and evolution of the Galaxy. Gaia will provide unparalleled positional and radial velocity measurements with the accuracies needed to produce this 3D map of around one billion stars and to carry out spectroscopic observations of around 150 million stars throughout the Local Group. In fact the project is also known by its unofficial name of "A billion stars in a billion pixels…"

Here's link to "60 second adventures in Astronomy – Taking a galactic census " which a gives brief overview of the Gaia project.



The camera used for this is one of the most advanced digital CCD (Charge Coupled Device) cameras in existence and is composed of an array of 106 CCDs with a resolution of around 1 billion pixels. Gaia orbits the Sun and in six hours the two telescopes within scan one large circle to observe around 10 million objects. These are not only stars but may also include asteroids of varying size, especially the large ones. This information is used by NASA and other organisations to plot their trajectories especially for those that may impact on Earth. The UK host the Cambridge data processing centre, where the Gaia imaging data are processed.

Here's another link which you may find interesting, again "60 seconds adventure in Astronomy – Gaia and the killer Asteroids".

Professor Andrew Norton from the Open University gave "The Adstock Science Club" a comprehensive, and extremely enlightening talk about the structure, function and science behind Gaia including the methods used to locate and fix a star's position in three dimensions within our galaxy.