Gaia – Revealing the Transient Sky

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Abstract

The European Space Agency Gaia mission will launch 20 Nov 2013. It is set to perform a detailed census of a billion stars in our Milky Way. Through its on board astrometric, photometric, spectro-photometric and high resolution spectroscopic instrumentation it will be able to accurately determine the distances, positions, motions and astrophysical parameters to stars throughout the Milky Way. The impact of Gaia will be felt across all areas of astrophysics, primarily by revolutionising our knowledge of accurate stellar distances, through microarcsec level parallax measurements, across the Milky Way.

Gaia will also have a major impact in discovery and characterising of the 'Transient Sky'. Over its 5 year baseline mission operations - it will observe each point on the sky on average 70 times. It will discover many transient and variable objects, with a rich yield of objects ranging from rapidly moving near earth objects to distant supernovae and tidal disruption events.

This presentation, on the eve of the launch of Gaia, will describe the mission, and its potential for furthering our understanding of the transient sky. The alert data stream from Gaia will be described, noting the technical complexity involved in ensuring that science alerts from Gaia are rapidly distributed to the community. The nature of the processing chain of the alerts system will be noted, showing how the rich data from Gaia available for each alert can be utilised to enable the determination of a reliable source classification for each event. The formation of followup networks to effectively maximise the science from the alerts will be described - providing opportunities for all to participate in this.