

A billion-pixel camera to map Milky Way

By far the largest digital camera ever built so far for a space mission has been painstakingly mosaicked together from 106 separate electronic detectors. The resulting "billion-pixel array" will serve as the super-sensitive 'eye' of the galaxy-mapping Gaia mission of the European Space Agency (ESA).

While without any aid, the naked human eye can see several thousands of stars on a clear night, Gaia will map a billion stars within our own Milky Way Galaxy and its neighbours. Gaia will be on a five-year mission from 2013, charting the brightness and spectral characteristics of galaxies along with their three-dimensional positions and motions, according to an ESA statement issued on Thursday.

In order to detect more distant stars up to a million times fainter than the human eye can see, Gaia will carry as many as 106 charge coupled devices (CCDs), which



are an advanced version of chips, within standard digital cameras. Developed for the Gaia mission by e2v Technologies of Chelmsford, Britain, these rectangular detectors are a little smaller than a credit card, each one measuring 4.7x6 cm but thinner than a human hair. The 0.5x1.0 m mosaic has been assembled at the Toulouse facility of Gaia prime contractor Astrium France.

Technicians spent almost all of May carefully fitting together each CCD package on the support structure, leaving only a one mm gap between them. Working in double shifts in strict cleanroom conditions, they added an average four CCDs per day, finally completing their task on June 1. "The mounting and precise alignment of the 106 CCDs is a key step in the assembly of the flight model focal plane assembly," said Philippe Gare, ESA's Gaia payload manager. *IANS*