Press Release

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Integral satellite makes new discovery to mark 15 years in orbit

17 October 2002, a Proton launcher placed the Integral space observatory into orbit. Celebrating its 15th year in operation this week, Integral identified the flash of gamma rays linked to the gravitational waves detected this summer by LIGO and VIRGO, thanks to its SPI spectrometer, whose development was managed by CNES.

Integral is an ESA satellite developed jointly by Europe, Russia and the United States dedicated to observing low-energy gamma rays, something that can only be accomplished from space. Initially planned to operate for five years, Integral is still going strong and France, through CNES, the French atomic energy and alternative energies commission CEA and the national scientific research centre CNRS, has played a key role throughout this mission. In particular, it helped develop two instruments on the satellite: the SPI spectrometer and the IBIS imager.

The gamma rays linked to the gravitational waves detected this summer by LIGO and VIRGO were therefore identified by the SPI spectrometer and its germanium detectors. SPI is currently the instrument offering the best spectral performance of its kind, while IBIS is able to generate images with a resolution of more than 16,000 pixels and separate detected radiation into its component wavelengths.

In 2014, Integral saw iron being produced by supernova SN2014J in the M82 galaxy. At the time, the observations by SPI and IBIS enabled a team of scientists, some from France, to demonstrate that a large portion of the iron in the Universe is produced by exploding supernovae of this type.

After 15 years in orbit, Integral has achieved significant scientific results. It has detected and pinpointed some 1,000 celestial sources and 89 gamma-ray bursts, greatly advanced knowledge of how heavy elements like iron and aluminium are produced, delivered deeper insights into the black hole at the centre of our Galaxy, and enhanced our understanding of the granularity of space-time.

CONTACTS

Fabienne Lissak	Head of Media	Tel +33 (0)1 44 76 78 37	fabienne.lissak@cnes.fr
Pascale Bresson	Press Officer	Tel +33 (0)1 44 76 75 39	pascale.bresson@cnes.fr
Raphaël Sart	Press Officer	Tel +33 (0)1 44 76 74 51	raphael.sart@cnes.fr

presse.cnes.fr