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**Space telescope COROT finds its first extrasolar planet**

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Launched by a Soyuz rocket from the Baikonur cosmodrome in Kazakhstan on 27 December 2006, the COROT satellite has discovered its first extrasolar planet.



The first planet detected by COROT, now named 'COROT-Exo-1b', is a very hot gas giant, with a radius equal to 1.78 times that of Jupiter. It orbits a yellow dwarf star similar to our Sun with a period of about 1.5 days. 'COROT-Exo-1b' is situated roughly 1500 light years from us, in the direction of the constellation Unicorn (Monoceros). Coordinated spectroscopic observations from the ground have also allowed the determination of the mass of the planet, equivalent to about 1.3 Jupiter masses.

The unanticipated level of accuracy of this raw data shows that COROT will be able to see rocky planets - perhaps even as small as Earth - and possibly provide an indication of their chemical composition.

"The first scientific success of the COROT mission shows the expertise of the scientists and engineers involved, in particular from Germany", said Professor Johann Johann-Dietrich Wörner, Chair of DLR. "With the discovery this extrasolar planet, we are reaping the scientific harvest of many years. We hope for further successes in the search for Earth-like planets", added Wörner.

COROT is a mission with a dual goal. It is the first space mission dedicated entirely to the search of extrasolar planets. It provides a wide-field survey of planets like our own at an unprecedented level of accuracy. It is also making the most comprehensive study ever of the interior of stars other than our Sun. Both objectives are achieved by analysing the behaviour of light emitted by a target star.



COROT's view of the Universe

The study of stellar interiors – or ‘asteroseismology’ – is carried out by analysing the oscillations in the light curve of the star. The oscillations are created due to mechanical waves propagating in the star itself and they give a clue to the structure of its interior.

COROT’s strength lies in the continued observation of the same targets in a given area of the sky. The observations have been on since the science operations began, 60 days ago. Another strong point is the accuracy with which it measures the variations in the luminosity of the star.

All the sources of noise and disturbance have not yet been taken into account in the data. This first exoplanet was detected with an error of only 0.0003 or 0.03% during one hour of observation.

On applying all the corrections to the light curves, the error will be reduced to only 5 parts out of 100 000. When many transits of the planet in front of the star are observed, the precision will approach just one or a few parts out of 100 000.

As a consequence, small planets down to the size of our Earth – three times smaller than initially thought possible - will be in the grasp of COROT. The satellite may also be able, in specific circumstances, to detect subtle variations in the stellar light reflected by the planet itself. This would give an indication of its chemical composition.

By measurements of the brightness of the stars in COROT's target field, the German telescope system BEST (Berlin Exoplanet Search Telescope), operated by DLR in Southern France, could contribute to the confirmation of the discovery.

#### **COROT – the mission**

COROT is a CNES project from France with the participation of international partners from the European Space Agency, Austria, Belgium, Brazil, Germany and Spain. COROT will contribute to the search for habitable, Earth-like planets around other stars. It will do this by detecting planets as they pass in front of their parent stars, blocking some of the light.

COROT was launched by a Soyuz rocket from the Baikonur cosmodrome in Kazakhstan on 27 December 2006. Settled in its almost-circular polar orbit ranging between 895 and 906 kilometres above the Earth's surface, the spacecraft was powered on on 2 January 2007 and started its science observations on 3 February this year.

The German partners are DLR, the University of Cologne and the Thüringer Observatory. On behalf of the Federal Government, DLR's Berlin-Adlershof facility has developed and tested the special onboard software for COROT over the past five years.

#### **Related Contacts**

**Andreas Schütz**

Deutsches Zentrum für Luft- und Raumfahrt (DLR) - German Aerospace Center  
Corporate Communications, Spokesman  
Tel: +49 2203 601-2474  
Mobile: +49 171 3126466  
Fax: +49 2203 601-3249  
E-Mail: andreas.schuetz@dlr.de

**Prof. Dr. Heike Rauer**

Institute of Planetary Research  
Tel: +49 30 67055-430  
Fax: +49 30 67055-384  
E-Mail: heike.rauer@dlr.de

**Dr. Manfred Gaida**

German Aerospace Center  
Space Administration, Space Science  
Tel: +49 228 447-417  
Fax: +49 228 447-745  
E-Mail: Manfred.Gaida@dlr.de

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