

COROT in search of rocky planets

A-Roll

00:00:40

For more than a decade, the SOHO mission has provided great insights into our Sun: its dark spots, massive flares, and the quakes on the surface which betray the inner composition. Astronomers have been eager to extend its pioneering techniques to other stars.

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The COROT spacecraft, standing for 'Convection Rotation and planetary Transits', will learn much more about the interior of stars, and it will be breaking new ground in the search for distant worlds outside our solar system.

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Since the discovery in 1995 of the first extra-solar planet, more than 200 have been identified using ground-based telescopes.

00:02:23

Clip Malcolm Fridlund, ESA project scientist COROT

"The planets that we've found so far are gas giants, more akin to Jupiter in our system. COROT is the first space mission, and the first mission ever that is looking for planets like our own Earth or something similar."

00:02:36

The 670 kilogramme satellite, launched by a Soyuz rocket from the Baïkonur cosmodrome, will be placed in a polar orbit at an altitude of some 850 kilometres. It carries a telescope, with a 30cm primary mirror focusing on a two-part camera, and will alternately observe opposite regions of the sky, starting with the Orion constellation.

00:03:00

Clip Malcolm Fridlund

"We will remain on this target until we have been travelling around the Sun together with the Earth so that the Sunlight starts penetrating into the telescope. After that we will turn 180 degrees and look in exactly the opposite direction towards the Galactic Centre and continue observing there for 150 days. And we will continue this way building up a stellar catalogue of hundreds of thousands of stars that we will have observed where hopefully we will find lots of nice planets."

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The telescope will not see planets directly. Their presence will be indicated by the very short and slight drops in the luminosity of a star as they pass in front of it.

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During its two-and-half year mission, COROT will certainly discover many dozens of new gas giants, but identifying the first rocky planet, other than our own, will have big implications.

00:03:58

Clip Malcolm Fridlund

"If we find one more in the vicinity of the Solar system, because COROT is not looking that far away, then that implies given the immensity of the galaxy and the 400 billion stars that we know about existing in our galaxy, that there must be a lot of them."

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Led by the French Space Agency, CNES, the mission today has a wide-ranging European scientific and technology participation, with the European Space Agency contributing essential parts of the spacecraft: the telescope optics, onboard computers and another major element.

00:04:34

Clip Malcolm Fridlund

"We have contributed with Belgium in developing the light baffle, the long tube that you see on the telescope which is keeping scattered light from entering the telescope and of course since we are measuring very, very small light variations this is extremely important, this is an unprecedented level of baffling that has been performed."

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Even more powerful space telescopes are already being planned for the future, including ESA's Darwin mission but COROT marks the first step in this new phase of space astronomy, better understanding other solar systems, how their planets are formed and how life on them can arise.

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Clip Malcolm Fridlund

"It will start changing mankind's view of itself, the context that we see ourselves in, because it will start to find out what kind of a world we live on, are we unique or are we not, and then of course the follow-up is to find out whether there is life somewhere else. So it's a long road that we are setting off on, but we are starting off and that's what makes me so excited about this."

00:05:42

End A-Roll

B-Roll

Interview cuts from Malcolm FRIDLUND, ESA Project scientist COROT

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Planets discovered from Earth so far as gas giants like Jupiter, COROT will be the first space mission searching for smaller rocky planets.

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Explains how the first observations will take place.

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The kind of planets COROT is expected to find.

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We're looking for other worlds like our own.

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If we find just one rocky planet, then we can be sure there are very many of them.

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COROT mission will help understand how solar systems are formed.

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Studying such planets in distant solar systems will teach us a lot about our solar system formation, its past and future evolution.

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ESA contributions to the COROT mission

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COROT is but the first step in the search for planets that can host life.

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The COROT mission will start changing mankind's view of itself and its planet

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Animations

Cuts: extrasolar planets, COROT observation and zoom into spacecraft, schematic representation of planetary transit and light drop, spacecraft and exploded inside view, polar Earth orbit.

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Views of telescope assembly and thermal tests at CNES Toulouse, and spacecraft solar array deployment test at Alcatel Cannes

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End of B-Roll