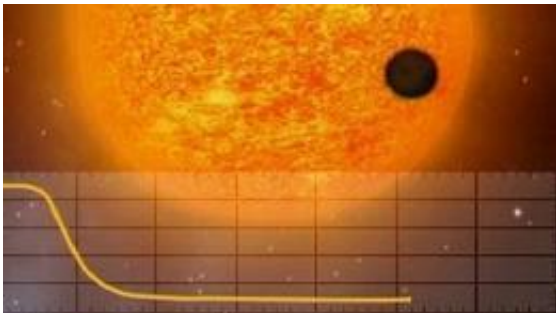


# Mission: To discover exoplanets

October 25 2012, by Uni Berne

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In 2017, a satellite named CHEOPS will be placed into orbit with the task of observing planets orbiting in other solar systems. Developed by researchers at EPFL, the device is part of a Swiss space research project selected by the European Space Agency (ESA) and led by the University of Bern. Credit: EPFL

This small satellite of primarily Swiss design was chosen above twenty-five other projects. Named CHEOPS for "CHaracterizing ExOPlanet Satellite," the selection of this device was just announced by the European Space Agency (ESA). This satellite, which will be put in orbit in 2017, is the result of collaboration between the University of Bern and the University of Geneva, EPFL, and ETHZ. It will also receive technical support from institutes in Belgium, Great Britain, Italy, Austria, Sweden, and possibly other European countries that demonstrate interest. In terms of EPFL, the Swiss Space Center will work on the design of the device.

CHEOPS will be equipped with a telescope of a meter and a half in length that has a diameter of 30 centimeters. It will be placed into orbit

at an altitude of 800 kilometers, on the frontier between day and night. From there, over the course of three years it will observe some 500 particularly bright stars and gather as much information as possible about their planets. To do this, it will use the method of detecting transits, in other words, diminishing brightness when the planet passes between its star and the earth. Although minute, these movements are detectable by sharp instruments such as the telescope from this Swiss project.

## Gas or Telluric

For these measurements, researchers can calculate the diameter of planets that eclipse their stars. This complementary detection method, called radial velocity, measures their mass. In combining these two pieces of information, one can determine both the density of these objects and whether they are more likely gaseous, like Jupiter or Saturn, or telluric, like Mars or Earth. The first exoplanet, 51 Peg b, was discovered in 1995 by two astronomers of the [Astronomical Observatory](#) of Geneva, Michel Mayor and Didier Queloz. Since then, planets that are small and increasingly difficult to detect have been added to the discoveries.

Provided by Ecole Polytechnique Federale de Lausanne

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