

UK scientists set to glimpse Rosetta as it swings by Earth

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One year into its twelve year journey to Comet 67P/Churyumov-Gerasimenko, the European Space Agency's (ESA) Rosetta mission will make a "close" flyby of Earth on Friday 4th March. UK scientists involved in the mission are hoping for a glimpse of the spacecraft which should be visible in the UK with the use of a telescope.

Image: Artist's impression of the Rosetta orbiter and lander approaching

Comet 67P/Churyumov-Gerasimenko Credit: ESA

Whilst it has been visible to large amateur telescopes since 26th February, the best opportunity to view the spacecraft in Europe will be on Friday 4th March when it makes its closest approach to Earth. At a distance of 1900 km or 1,180 miles (the equivalent of a journey between Edinburgh and Rome) even the 32 metre solar panels on Rosetta are expected to be visible!

After sunset the spacecraft will appear to travel south east to south west, moving from the constellation Sextans towards the setting Sun, crossing the complete sky. As it heads west it will move faster and disappear below the horizon around 22.00 GMT. From Europe it will only reach a magnitude of +8 or +9 on the brightness scale used by astronomers. This is dimmer than a typical faint star and whilst not readily apparent to the eye will be able to be viewed and photographed (weather permitting) by a decent amateur telescope with digital imaging equipment. See notes to editors for details about ESA's "Rosetta Up Close" photographic competition.

UK scientists, who are involved in 7 of the instruments/experiments on the orbiter and 4 on the lander, are eagerly awaiting a brief look at the spacecraft as it swings by. Professor Ian Wright from the Open University is Principal Investigator for the Ptolemy instrument on the Philae lander. He will be looking out for Rosetta from his back garden near Olney in Buckinghamshire.

"It's amazing to think that on Friday night this spacecraft, which left Earth a year ago on a truly epic voyage, will be just a few thousand miles above our heads. Not only that, with luck (i.e. no clouds!), it should be visible in the night sky - I will be outside, around 10 pm, trying to observe it with my telescope and binoculars."

Dan Andrews, a Phd student from the Open University, who works on Ptolemy adds,

“This is just the second step on Rosetta’s journey, after Friday we will be heading towards a Mars flyby (26th February 2007), having robbed energy from the Earth as we slingshot towards our target comet.”

This is the first of four planet swing-bys (three with Earth and one with Mars) which Rosetta will make before reaching Comet 67P/Churyumov-Gerasimenko in 2014. Swing-bys are necessary to accelerate the spacecraft using the planet’s gravity, enabling it to reach the correct orbit once near the comet.

During the swing-by a number of activities are planned including a tracking test in preparation for the spacecraft’s flyby of two asteroids later in its journey (Steins in September 2008 and Lutetia in July 2010). This test of the asteroid tracking mode, will be carried out using the Moon, rather than an asteroid, as a target.

The Rosetta Plasma Consortium instruments, which UK scientists contributed to, are being switched on during the flyby. RPC team member Chris Carr from Imperial College explains more,

“The Earth flyby gives us an excellent opportunity to calibrate the sensors, for example, the magnetometer can be checked against the very precisely known Earth-field at the low altitude closest approach point. In addition, Rosetta’s approach to Earth gives us a unique opportunity to do global magnetosphere studies with other operating missions such as Cluster and Double Star.”

As the oldest and most primitive bodies in the solar system comets provide the key to unlocking the secrets of the Universe. Comets have remained unchanged in comparison with other bodies within our solar

system and provide the earliest record of materials in a pristine form.

On arrival at the comet, in around May 2014, the spacecraft will edge closer to the nucleus before deploying the Philae lander in November 2014. Once on the surface of the comet a whole range of scientific studies will be conducted in situ with the 10 instruments on board.

Source: PPARC

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