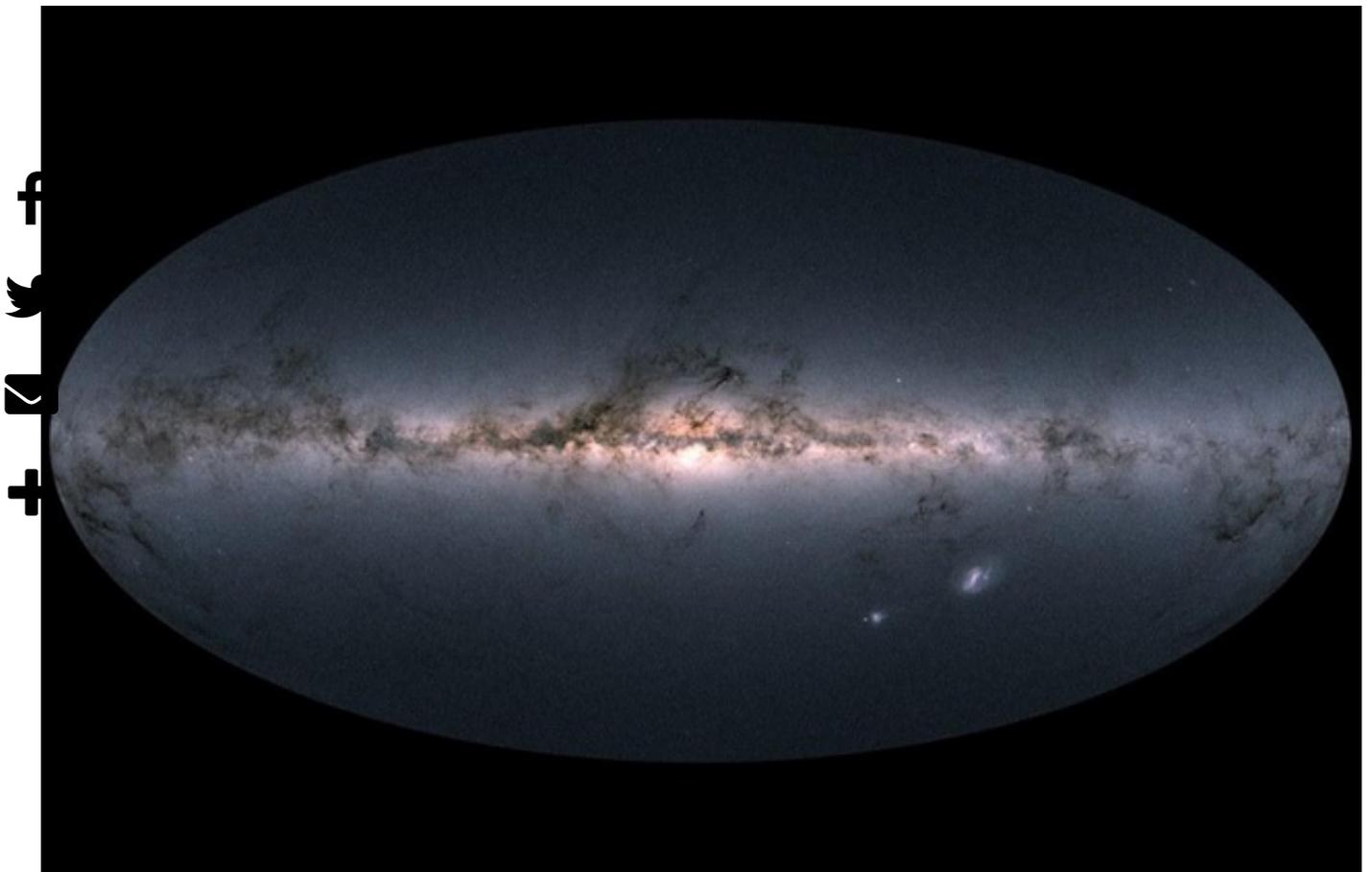'GAIA'

European satellite data will make 3D galaxy map possible

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Gaia's view of our Milky Way galaxy, based on data from almost 1.7 billion stars.

As part of a mission that includes the University of Geneva, the European satellite 'Gaia' has sent back billions of measurements in a mammoth harvest of data that will help researchers build a detailed 3D map of the galaxy.

The mission is led by the <u>European Space Agency</u> (ESA) and was launched in 2013, mainly to track and determine the position, movement, and distance of stars in our galaxy.

The second batch of information gleaned by Gaia – after a first harvest in 2016 that spawned 800 scientific articles in the space of a year – contains 1.69 billion sources (mostly stars) and will be analysed by participating research institutions across the continent, including the University of Geneva (UNIGE).

"The idea [of Gaia] is to literally explode our knowledge of distances in the universe," said UNIGE researcher Laurent Eyer. Some 10,000 times more objects are analysed by this satellite compared with previous efforts, with a precision rate 100 times sharper, he said.

Ultimately, in tracking the exact position in the sky of these stars, their distance from the earth, their variability, and their movement, the Gaia project will allow scientists to map much more precisely the shape and distances of the galaxy (see video).

The galaxy view sent back by Gaia's 2016 (left) and 2018 (right) data harvests.

As for UNIGE's specific role, this centres on the concept of "variability": studying data from over a half-million of the stars sent back by Gaia, the Swiss researchers will classify changes in the light emitted by the stars, as well as the shape of the light's trajectory.

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