

A School Competition on the computation of the solar parallax using observations from the Mercury Transit of 9 May 2016 – Results and Discussion

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On 9 May 2016 an intriguing and rare event occurred. Seen from most countries in Europe, Mercury, the planet nearest to the Sun, crossed the Sun's surface. Such a phenomenon is better known for the moon, for during such an eclipse it gets dark (or darker), so everyone will notice that something special is going on. But as Mercury is very, very small compared to the Sun, one will never remark such a Mercury-eclipse by oneself.

It was the famous astronomer Johannes Kepler who realized in 1601 that Mercury (or Venus) transits could be observed from the Earth. Later in 1691, Edmund Halley published a mathematical algorithm to compute the solar parallax (from which one can determine the distance from Earth to the Sun) from observations made during the transit. It is sad to note that neither of the both scientists had the chance to witness a Mercury transit during their lifetime.

Well before the event, the ESA Communication Office announced a school competition to observe the Mercury transit and repeat the measurements proposed by Edmund Halley and other scientists since then. Several hints were given on the observation possibilities (telescope, binoculars, solar glasses), and examples of the algorithms in form of written formulae or excel sheet formulae were given. All schools were encouraged to share their data with each other and the needed support was provided by ESA.

After the transit, all school teams were asked to provide their results and an accompanying report to allow us to get a picture of the team's technical, mathematical, and social activities in preparation of the event and the event itself.

In our presentation, we will give a short overview of the participants and their efforts. We analyze our school competition expectations against the results as seen from a scientist point of view (1st and 3rd author) and a scientific communicator point of view (2nd author), and give our perspective towards upcoming planetary eclipse opportunities, i.e. the Mercury transit on 11 November 2019.