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TESTING AND PRACTICAL USE OF GENERAL RELATIVISTIC CLOCK EFFECTS IN THE
VICINITY OF THE EARTH**Abstract**

Due to a malfunction of the Fregat upper stage of the Soyuz rocket the Galileo satellites 5 and 6 were released in an elliptical orbit instead in the targeted circular orbit. This gave the unique opportunity to perform a test of the gravitational redshift resulting in an improvement of about a factor 5 compared with the previously best tests from Gravity Probe A test more than 40 years ago. We report on the data analysis and also propose new clock tests of further general relativistic effects like the gravitomagnetic clock effect or the gravitational time delay. We also discuss the implications of a better understanding of these relativistic effects for practical purposes like positioning, geodesy, and space metrology.