

Status of the planar electrostatic gradiometer GREMLIT for airborne geodesy

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Taking advantage of technologies developed by ONERA for the GRACE, GOCE and GRACE FOLLOW-ON space missions, the GREMLIT airborne gravity gradiometer is based on a planar electrostatic gradiometer configuration. The feasibility and performance of the instrument was proved by simulations based on actual data and recorded environmental aircraft perturbations, with performance of about one Eötvös along the two horizontal components of the gravity gradient. The performance is directly insured by a stabilized platform, controlled by the common mode outputs of the instrument itself, in order to reject the perturbations induced by the airborne environment in the horizontal directions.

After the definition of the architecture of the stabilized platform to achieve the global performance of the gradiometer, the platform has been manufactured and integrated. In order to assess the operation of the electrostatic gradiometer on its associated stabilized platform, a one-axis prototype has also been built. The prototype is under testing, the performances are confirmed, and a first gradiometric test will be done soon. Testing on an hexapod to simulate flight conditions of the complete gradiometer (gradiometer + platform) will be held on March 2019, and a flight test campaign is forecasted in April 2019 on Safire airplane (CNES Company).

The poster will emphasize the results of these tests of the gradiometer.