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Experiences with the ZLS Burris gravimeter

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ZLS Burris gravimeter is the new high precision, metal, zero-length spring relative gravimeter of which measuring system is similar to the G type of LaCoste & Romberg meter. The Burris meter is equipped with 50 mGal electrostatic feedback system, precise pendulum levels and automatic reading and data logging system. The feedback control system allow to modify e.g. the damping and time resolution of data.

During two years long experiences with the Burris B-20 gravimeter, it has been used partly for regional and local gravity surveys and partly for earth-tide observations. The precision of the gravimeter for specified applications can be characterized by:

- standard deviation of the gravimeter reading of about 7 μGal and 2 μGal for regional and local (micro) gravity surveys respectively,

- standard deviation of the observed hourly ordinate less than 0.2 μGal for earth-tide observations.

Good magnetic properties of the Burris B-20 meter were determined from the experiment with artificial magnetic field generated by Helmholtz coil. The magnetic sensitivity for horizontal and vertical component of the magnetic induction was less than 0.05 μGal/μT. Temperature properties were experimentally studied from few days continuous observation of the meter in a temperature stabilized room. The temperature change of 20^{o}C caused the gravimeter reading change of about 30 μGal.

Experiences and results with the B-20 gravimeter showed that the Burris meter is an interesting alternative for the more spread Scintrex CG-5 meter. High precision and effective results can be achieved mainly for micro-gravity surveys (vertical gravity gradient etc.) and earth-tide observations.