Gravity and geodetic integrated measurements in Tatra Mountains

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A b s t r a c t : All territory of Slovakia is covered by regional gravity measurements in mapping scale 1:25000 (4–6 points/km^2) except the area of High Tatra Mountains because of the problems with geometrical levelling and older gravity meters working range in such extremely rough terrain. Nowadays, GPS method in combination with quasigeoid is used for determination of physical heights with accuracy of several cm, GPS providing also the spatial position. The working range of new generation gravity meters has also enlarged. Therefore, in the frame of the project "The Gravity Mapping of Tatra Mountains", a joint gravity, GPS and astronomical measurements have been realised in the most uncovered parts during the summer 2004. Acquired data were used for calculation of new Bouguer gravity anomaly map and for calculation of improved local quasigeoid in this area. In total, 145 gravity points plus 8 base GPS stations were measured. Astronomical measurements have been performed at 14 sites.

Key words: gravity measurements, astronomical measurements, GPS methods, new Bouguer gravity map, new quasigeoid

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