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1ST INTERNATIONAL CONFERENCE
"PHOTONICS TECHNOLOGIES – RIGA 2012"
August 27-28, 2012

EXHIBITION FOR "HIGH-TECH" SMES
"PHOTONICS TECHNOLOGIES – BALTICS 2012"
August 27, 2012

RESEARCH TRAINING COURSE
"PHOTONICS TECHNOLOGIES – RIGA 2012"
August 23-25, 2012

PROGRAMME
ABSTRACTS

LATVIJAS UNIVERSITĀTE
ANNO 1919
UNIVERSITY OF LATVIA

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Unlocking and Boosting Research Potential for Photonics in Latvia – Towards Effective Integration in the European Research Area (FOTONIKA-LV)
FP7-REGPOT-CT-2011-285912

Complementary event:
Brokerage on Photonics for FP7 ICT-2013 Calls 10 and 11,
August 27, 2012 (9.00-14.00)

Hotel "Radi un Draugi", Mārstaļu str. 3

Conference organisers

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Photonics Results Applied in GNSS and Geoid Determination

I. Janpaule, D. Haritonova, K. Morozova
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The photonics plays an important role at the research and develpment of the Institute of Geodesy and Geoinformation of the University of Latvia (LU GGI). The LU GGI applies the space related technologies for the environmental studies in Latvia.

Photonics has been applied in satellite laser ranging (SLR) system for Low Earth Orbiters (LEO) operational at the GGI. Test observations have approved the capability of SLR for LEO ranging, including LAGEOS, ERS2, ENVISAT, Ajisai and others.

Recently the development and testing of a new digital zenith camera model and it's control software for the studies of vertical deflection has been commenced in GGI. Application of photonics instrumentation kas a key function for star image acquisition. Main objective of the project – multiple improvement of data acquisition for accurate geoid model, widely used in ingeneering application.

The impact of the Earth tides on the coordinate changes of EUPOS®-RIGA and EPN stations has been studied. EUPOS and EPN reference stations have been used and Bernese v.5.0 software in kinematic mode was applied. Earth tides and the tide caused deformations of the Earth crust create vertical movement of the site with the maximum amplitude of 30 cm according to the theoretical estimates. The standard data sets were taken from IGS data base. Earth tidal vertical displacements at GNSS stations have been obtained by modifying the routine of Bernese GPS Software computing tidal station displacements in accordance with the latest IERS Conventions. The positioning accuracy was discovered as well.