

## Calibration of the superconducting gravimeter iGrav10 by parallel observation with the absolute gravimeter FG5 #217

SUGIHARA, Mituhiko<sup>1\*</sup> ; NAWA, Kazunari<sup>1</sup> ; MIYAKAWA, Ayumu<sup>1</sup>

<sup>1</sup>AIST

An iGrav superconducting gravimeter (SG) was re-installed in the Farnsworth field, TX for the purpose of studying the effects of CO<sub>2</sub> injection at an enhanced oil recovery (EOR) site in December 2013. Usually the iGrav SG has an ultra-low drift of less than 0.5 microGal / month and a virtually constant scale factor. Empirically, the drift rate looks negligible using the TSoft program. However observed trend contains the drift-like component which is about 0.4 microGal / day. Strictly it is difficult to distinguish real gravity changes from time-varying instrumental drift. We made co-located measurements with the FG5 absolute gravimeter (AG) in middle of December 2013 and middle of January 2014. The gravity differences between the two periods was determined to be +1 +/-2 microGal by the AG measurements, whereas -12 microGal by the SG measurements. The observed drift of the SG was much larger than the specified value, so that the SG was determined to be reset and is improved. Generally it takes at least six months to evaluate such low drift of less than 0.5 microGal / month using co-located measurements with AG. Another choice is parallel SG and SG measurements located in close proximity. We are planning such measurements at the Farnsworth site in 2014. This research is funded and supported by Ministry of Economy, Trade and Industry (METI).

Keywords: Superconducting gravimeter, iGrav, absolute gravimeter, FG5, parallel observation