

EGU22-4165, updated on 18 Aug 2022

<https://doi.org/10.5194/egusphere-egu22-4165>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



An update to the development of the Wee-g: A high-sensitivity MEMS-based relative gravimeter for multi-pixel applications

Kristian Anastasiou, Giles Hammond, Douglas Paul, Karl Toland, Abhinav Prasad, Steven Bramsiepe, Elizabeth Passey, and Henrietta Rakoczi

University of Glasgow, College of Science and Engineering, United Kingdom

(<https://www.gla.ac.uk/colleges/scienceengineering/>)

The measurement of tiny variations of gravity over long time-scales or across the landscape has been of interest for geophysicists and various industries since the development of the first modern gravimeter. The manufacturing cost and overall survey time required with commercial gravimeters, however, limit their potential application. The MEMS gravimeter developed at the University of Glasgow, Wee-g, is a small form-factor, high-sensitivity relative gravimeter under development, with its low cost enabling the potential to be used in a multi-pixel setting, such as the network planned to be installed around Mount Etna under the NEWTON-g project.

Since the previous reporting of the development and assembly of a MEMS based high-sensitivity relative gravimeter for multi-pixel imaging applications (Toland, K et al, EGU2021-13167), significant progress has been achieved towards the goal of achieving multi-pixel imaging. Wee-g field prototypes have been delivered to end users for various projects, including one currently deployed on Mount Etna since summer 2021. The field prototype running on Mount Etna is running in parallel with an iGrav commercial gravimeter to help understand the characteristics of the Wee-g and allow for comparisons with a commercial device. Currently, multiple final design Wee-g devices are being manufactured for delivery, such as for the multi-pixel array as part of NEWTON-g and for various outdoor field trials.

This presentation will report on the analysis of the field prototype Wee-g device that is currently running on Mount Etna, as well as the progress that has been made in manufacturing multiple Wee-g devices, and the outlook for activities that will be running throughout 2022, paving the way to a more effective and detailed method of gravity surveying.