Reports

In the submitted manuscript, the authors first review the main research papers on the atomic gravimeter, especially its dynamic measurement technology. Then, it presents the reported principle, scheme and dynamic measurement equipment of an atom gravimeter. The generation mechanism and suppression methods of the main sources of dynamic measurement error, such as vibration noise, accelerometer drift and dynamic carrier effect, are analyzed. Finally, prospects for applying the dynamic measurement technology of the atomic gravimeter in the mapping of the gravitational field, navigation and detection of underwater targets are explored. The authors point to the state-of-the-art for several essential characteristics of gravimeters. Highlighting mainly those related to dynamic characteristics and a vast and relevant updated bibliography is discussed in the manuscript. They add a separate section on temperature effects and an experimental apparatus, in Fig. (1) and Fig.(7), used in their measurements. It is imperative to emphasize, however, the preliminary character and few measurements of these types of gravimeters. In the opinion of the authors themselves comes through the sentence: "Currently, field measurements of atomic gravimeters are mostly static or quasi-dynamic stop-and-go experiments, and dynamic measurement research is still in its infancy" . The work is important due to the bibliography and the analysis of the characteristics of the relevant models and experiments on this type of meter. They also emphasize that: the accelerometer must have high precision, therefore, the error of the accelerometer itself cannot be ignored. For example, the influence of environmental factors, such as temperature or the structure of the device itself, makes the accelerometer oscillate. The authors certainly indicate the main methods that can be involved in the entire measurement process, do not conflict with each other and can be used all or only some of them to inhibit accelerometer drift; i) first is to add a temperature control system; ii) second is to model and compensate for accelerometer temperature drift, collect the drift data at different temperatures; iii) third is to compare the exact gravity value obtained by the atomic gravimeter with that of the accelerometer to obtain the drift value and deduce it.

It is a good and extensive bibliographic work on the state-of-the-art on gravimeters, a project of an experimental apparatus and a very promising beginning of measurements, but little progress. However, there are some points that deserve further attention:

1 - Check the flow of Eq. (1). Definition of Df = (keff . g - 2pa)T2, with a= keff . g. Rewrite Eq.(1) so that Df can be a number between zero and 2p.

2 - Fig.(2) is the same as Fig.(2) of the cited reference with Ref.(41) with some improvement, but without the citation of the original figure or its authors.

3 - The sensitivity function h(t), from Eqs.(5) and (7), has no phrase or expression showing its characteristics.

4 - A point where the work of the present manuscript is described concerns the experimental setup for the experiment - Fig.(1), was not much explored in measurements. It would be advisable to have more data with this self-developed apparatus and its measurements to give greater understanding and support to the gravimeter model in evidence, and a consistent comparison with current gravimeters.