

Interactive comment on “Vibration error compensation algorithm in the development of the laser interference absolute gravimeter” by Qiong Wu et al.

Anonymous Referee #2

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The authors address the issue of vibration errors in absolute gravimeters. They present a vibration error compensation algorithm related to a passive vibration isolation system. I recommend a publication in the Journal Geoscientific Instrumentation, provided the authors address the following points:

(16-17-18) sentence is not clear : the resolution of the tests results shows...the word ‘resolution’ should be precised as the measuring system resolution. As said, it can be confused with the resolution of the system of equations.

(44) (53-54) (238-240) precise the definition of accuracy and precision to avoid misunderstanding. (66-67) I don’t see the relation between the FB –cart motion matching

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and the the time-displacement coordinates measurements. A global schematic of the system could help.

(68-71) sentence comprehensible but should be split in two more concise sentences.

(80) applies no closed-loop feedback at any point : need some explanations

(120-121) explain why : Most of the useful signals related to the disturbance error of the absolute gravity measurement in $Z(s)$ can be recovered by the synchronously output vibration signal $X(s)$. in relation with the previous paragraph.

(217) [6] has to be explicated

(219-221) explain the choice of the parameters and the effects in the genetic algorithm.

(222-224) again, a short explanation of genetic algorithm could help the comprehension and shows the advantages of the algorithm with respect to the classical least-squares method.

(269-273) are copy-paste of (13-18), should be reformulated to avoid the exact repetition.

The following are purely typing corrections :

(14) ($1 \mu\text{Gal} = 1 \times 10^{-8} \text{m/s}^2$) the number 2 should be exponent.

(42) technology

(64)servo motor installed on the outside of the drop chamber.

(66-67) will be are introduced.

(74) is are connected

(93) separate the comma from the equation to avoid confusion with prime.

(103) no space after ‘the intrinsic frequency’

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- (142) kth harmonic : th should be exponent
- (147) 10-7 m : -7 should be exponent
- (148) 10-11 m : -11 should be exponent
- (153) with which the low frequency signals -> whose low frequency signals
- (186) ith iteration : th should be exponent
- (194) ith : th should be exponent
- (202) and (203) (0.05,100] ->[0.05,100]
- (209) 10-9 : -9 should be exponent
- (213)] should be a parenthesis
- (226) legend fig 3 : ith iteration, th should be exponent
- (231) ith : th should be exponent

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<https://doi.org/10.5194/gi-2020-33>, 2020.