

## ***Interactive comment on “Measurement of absolute gravity acceleration in Firenze” by M. de Angelis et al.***

### **Anonymous Referee #1**

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This paper reports on measurements performed with a FG5 absolute gravimeter in a laboratory. This paper is basically at the level of a laboratory report. Some interesting points maybe worth investigating into details, but this is not the case. For example: 1) You tried to solve for the vertical gravity gradient. As far as I know previous attempts remained unsuccessful. At least, if you have relevant results, you should refer yourself to previously published studies and discuss them (Niebauer et al., *Metrologia*, 1995; Robertson, *Metrologia*, 2001; Hipkin, *Metrologia*, 1999;. . .). And of course, comparisons must be performed with the gradient as measured with spring gravimeters. 2) Incidentally as long as you do not have a reliable measurement of the gravity gradient the absolute gravity measurements remain inaccurate. And what about the calibration of the laser, the barometer and the clock? 3) Should you want to publish a reference paper describing accurately the gravity field in your laboratory, please refer yourself

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first to the outstanding papers of Merlet et al., *Metrologia*, 2008 or Baumann et al., *Metrologia*, 2009. 4) About the seismic noise. First, this is not really a relevant parameter: high frequency (say  $> 0.1$  Hz) is not a problem in determining a value of  $g$  after measuring for 12-24 h. If necessary the drop sampling rate may be increased to 5 or 4 s (see Van Camp et al., *JGR*, 2004). Second, if you really want to discuss the influence of this noise and show whether it is relevant or not, you should analyze the relationship between the quality of the final value of  $g$  and the noise level of the PSDs as recorded by the seismometer. 5) The discussion about the value measured 20 years ago is absolutely not relevant. 6) A comparison between the atom and FG5 gravimeters maybe interesting. But this would be the subject of only one paper. In its present form I consider that this report lacks scientific or technical depth and elaboration, and is basically unpublishable.

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Interactive comment on Solid Earth Discuss., 3, 43, 2011.