Reply to the comments

First of all, I would like to now if the authors have redesigned and/or rebuilt any part of the coils of just made a new electronics.

Reply 1: The authors have not redesigned and/or built any part of the coils. However we have designed a matching electronics which delivered a state of art calibration system.

The authors describe in detail the structure of the coils in section 2. They illustrate the description with figures 3 and 4. In order to make easier to the reader the description of the system, it would be interesting to include some detailed pictures of selected parts of the coils, probably as insets of figure 4.

Reply 2: The authors have included some more detailed images of selected parts of the coil system to make easier to the reader the description of the system.

Figure: The Bakelite bracket is used for rolling the coil at the edges and ensures additional stiffness at the edges.

Figure: The coils are supported by a borosilicate glass piping construction to electrically isolate the coils from the support structure. The primary glass support structure at the end corners is joined using a female square design 6 way cross aluminum connector to which a Bakelite bracket is fixed using a nut and a bolt.

Figure: The sensor to be calibrated is mounted on a non-magnetic table referred to as the test stand which is placed at the centre of the Helmholtz cage.

The authors claim that the coils are stable under temperature changes but, what about the electronics? Normally, high-resolution electronics is affected by temperature changes - for example, the output of op-app normally has small drifts due to thermal gradients. Have the authors check the stability of the system against thermal changes, for example, measuring the same fluxgate day and night?

Reply 3: For repeat experiments conducted on any random day the repeatability of the results is observed and hence we conclude that the system is stable against thermal changes.

It is mentioned that 3 more sensors were measured. In order to give more information, the curves of these three sensors should be included.

Reply 4: Following are the plots for other 3 sensors. Few plots were generated in Gnuplot and few with Office software. If accepted for publication I shall provide all in Gnuplot.

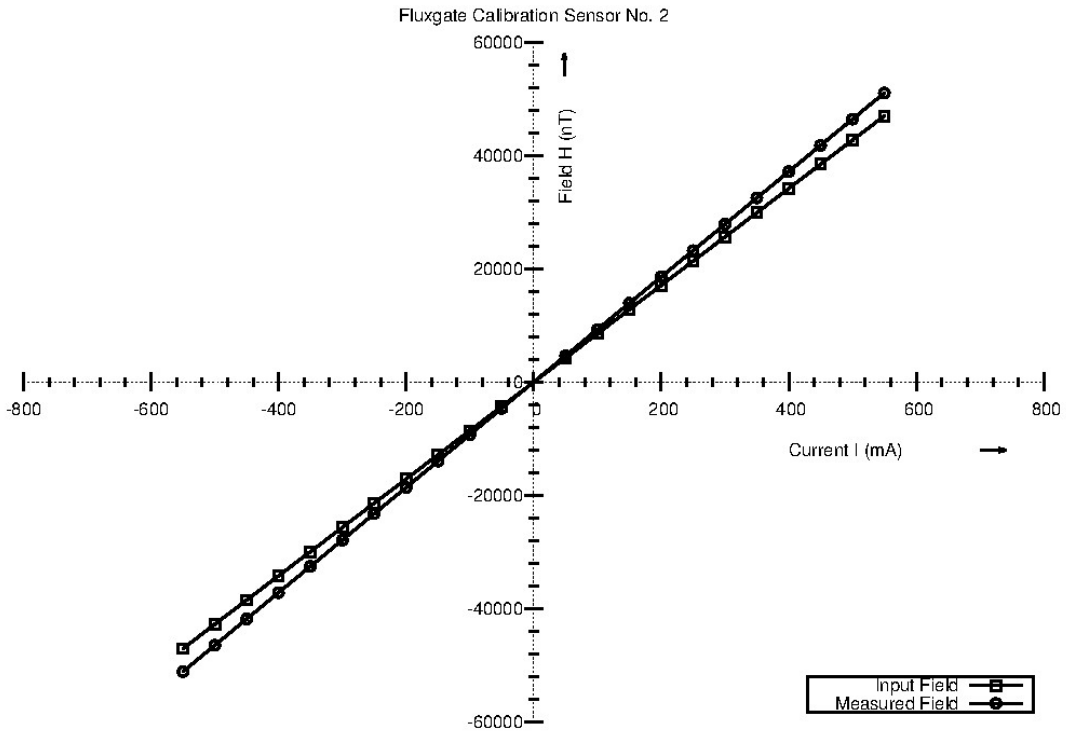

Figure: Fluxgate calibration using H Coil (Sensor No. 2)

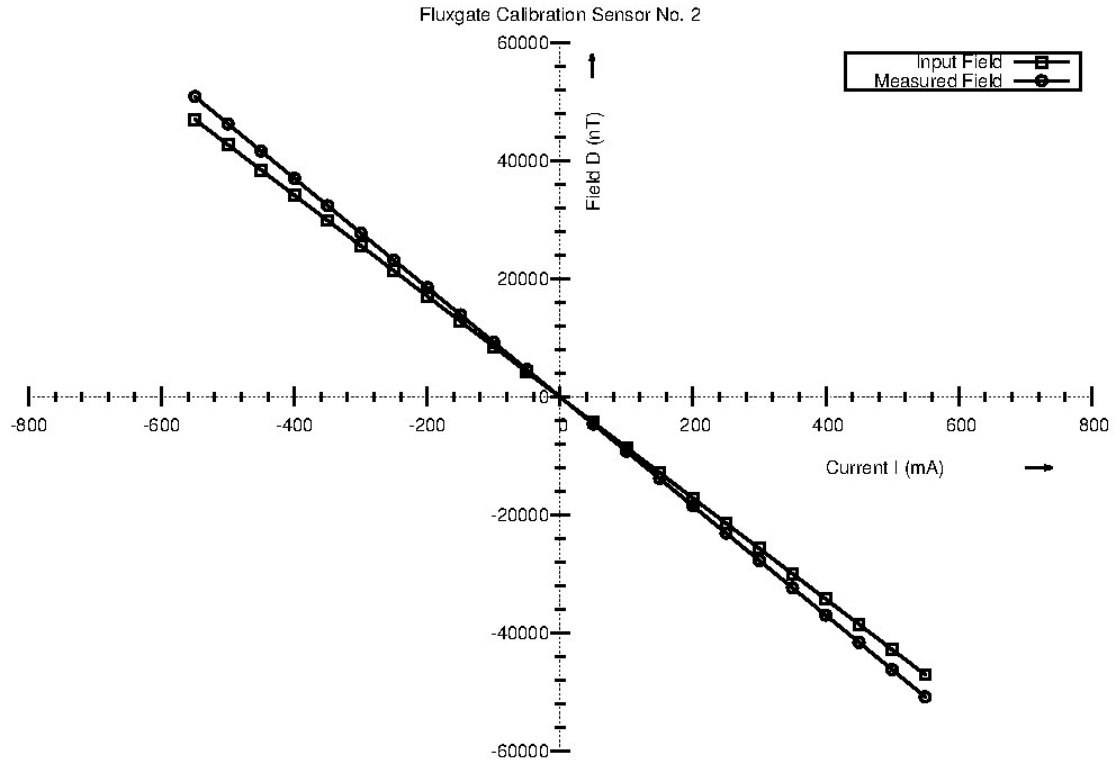

Figure: Fluxgate calibration using D Coil (Sensor No. 2)

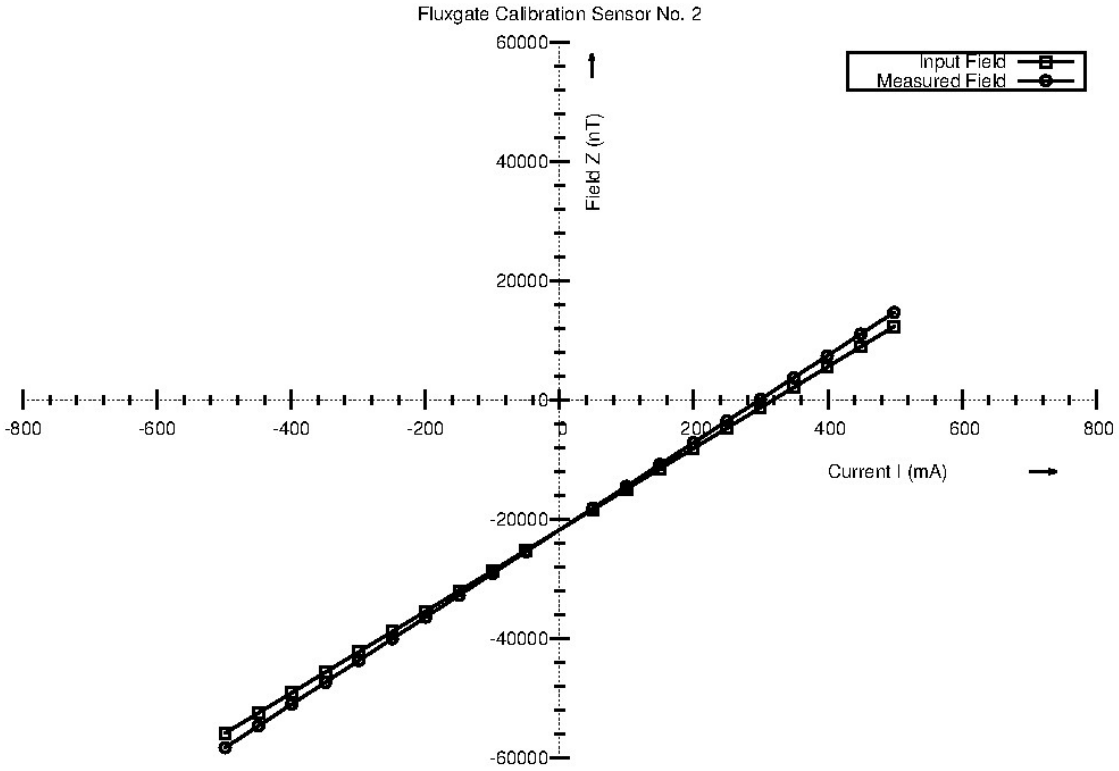

Figure: Fluxgate calibration using Z Coil (Sensor No. 2)

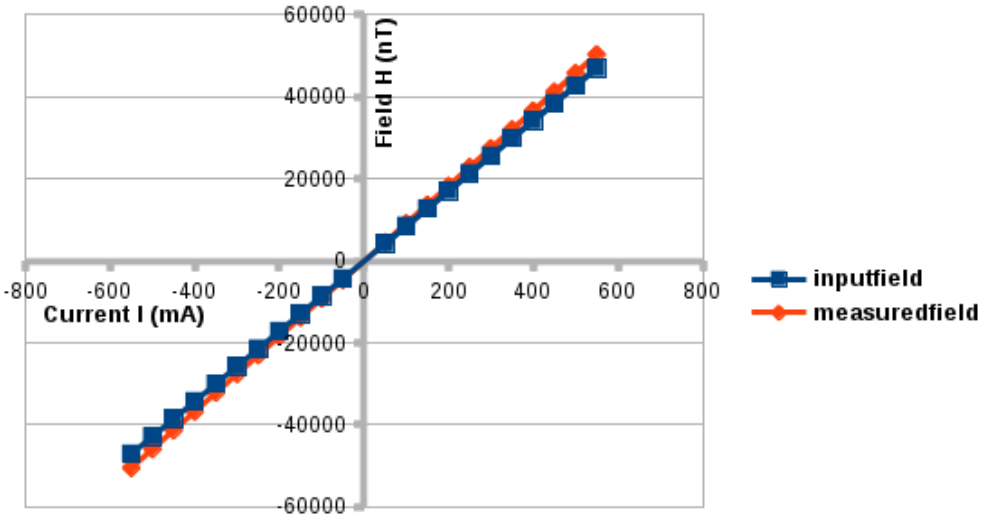

Figure: Fluxgate calibration using H Coil (Sensor No. 3)

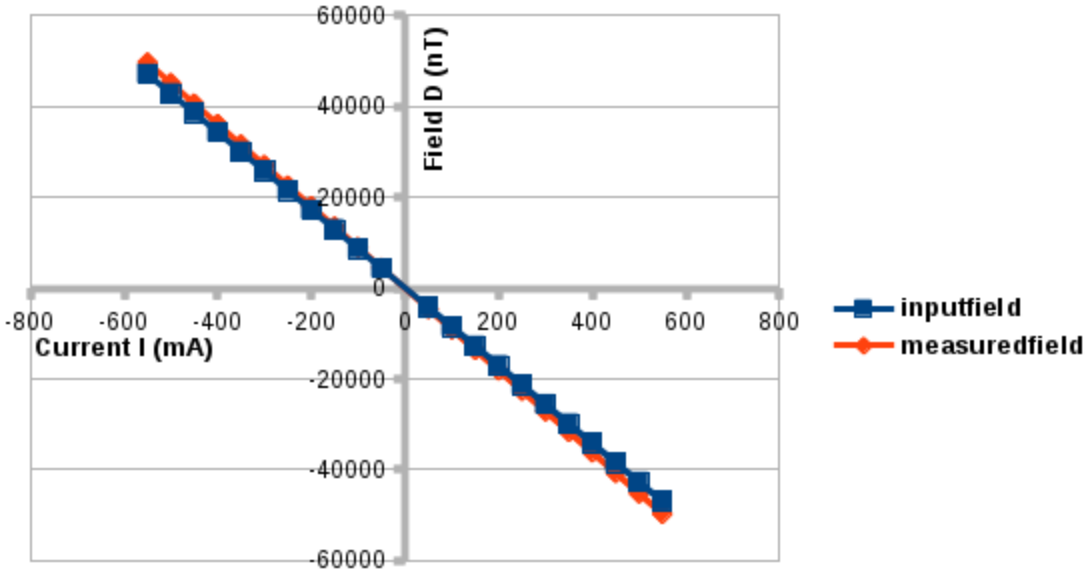

Figure: Fluxgate calibration using D Coil (Sensor No. 3)

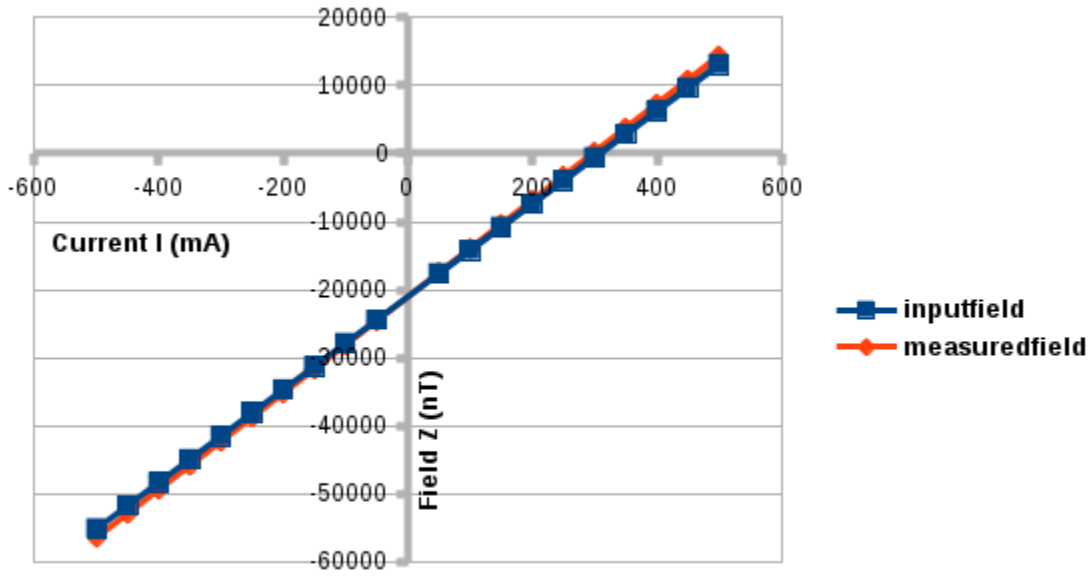

Figure: Fluxgate calibration using Z Coil (Sensor No. 3)

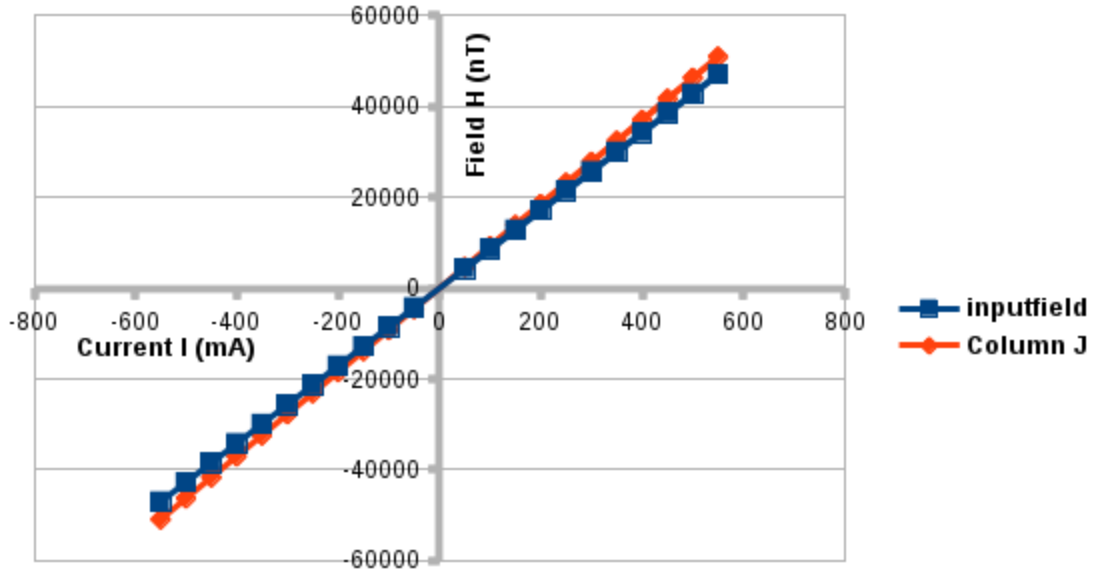

Figure: Fluxgate calibration using H Coil (Sensor No. 4)

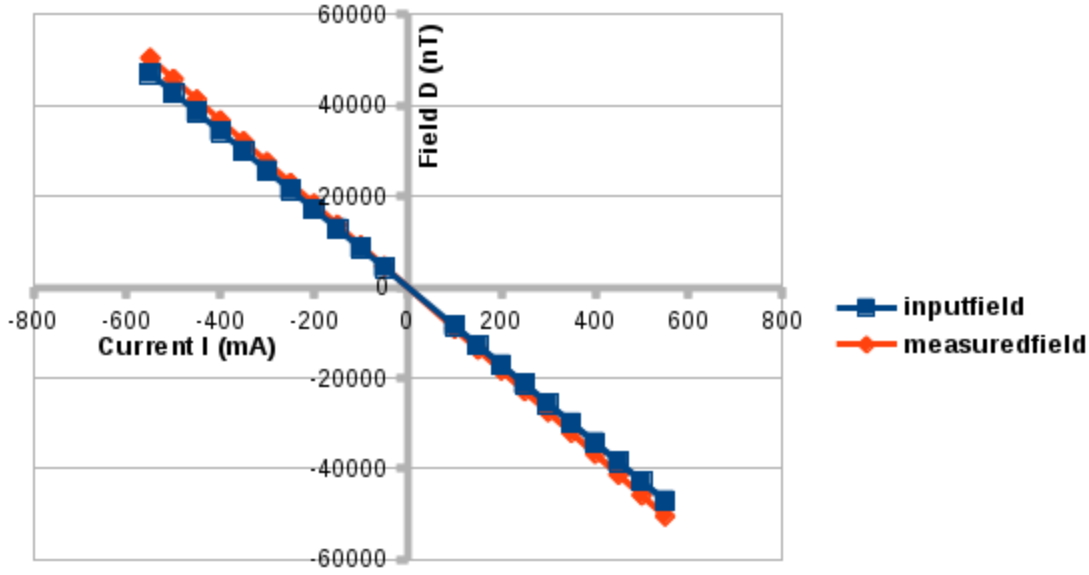

Figure: Fluxgate calibration using D Coil (Sensor No. 4)

In addition, the curve shown in figure 2 - extracted from a reference - should be measured in the real system, to show the uniformity of the magnetic field in the Helmholtz coil system.

Reply 5: This figure we will delete if required as we have not derived the formula.

Finally, are there other facilities included to calibrate magnetic sensors like angular dependence of the sensitivity or possibilities to control the temperature?

Reply 6: There may be but we are not aware.