

## ***Interactive comment on “Tri Axial Square Helmholtz Coil system at the Alibag Magnetic Observatory: Upgraded to Magnetic Sensor calibration facility” by Prasanna Mahavarkar et al.***

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The comment was uploaded in the form of a supplement:  
<https://www.geosci-instrum-method-data-syst-discuss.net/gi-2017-47/gi-2017-47-AC1-supplement.pdf>

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss.,  
<https://doi.org/10.5194/gi-2017-47, 2017>.

C1

### Reply to the comments

The orthogonality of the coil system is not mentioned in the manuscript. It is essential to know the angles between the coils, if good calibration of magnetometer sensors should be made. It is quite worrying that this point isn't mentioned. So please add details about this.

Another point not mentioned in the manuscript is the influence from the environment. What is the 'noise' from the environment day and night? Has the temperature and humidity any influence on the coil constants?

Reply 1: The coil system had been manufactured by Department of PRAHA, Czechoslovakia (known from the few scanned pages available with the authors) and we believe that these angles were calculated during the commissioning of the set up, however these details are not mentioned in the said document.

For repeat experiments conducted on any random day the repeatability of the results is observed and hence the influence from the environment is ruled out.

Detailed comments:

"A Tri Axial Square Helmholtz Coil system . . . was . . . commissioned." Page 1 line 2 Which company build the original coil system back in 1985?

Reply 2: The coil system had been manufactured by Department of PRAHA, Czechoslovakia.

"Square coils . . . provides a wider uniform field . . ." Page 1 line 17 How much bigger is the uniform field from a square Helmholtz coil compared to a circular Helmholtz coil?

Reply 3: This system yields a working space volume of approx. 5 liters (considering a cubic sensor of 17 cubic cm).

"All technical parameters of the system were re-calculated". Page 2 line 15 Please specify how with formulas and results: coil constants, coil resistance, etc.

Reply 4: Tabulated below

Parameter	H	D	Z
Coil Constant (nT/mA)	76.44	85.55	68.44
Coil Dimension (mm)	2200	1900	2500
Coil Resistance ( $\Omega$ )	45	39	62
Coil Inductance (mH)	95	80	157
Coil Turns	$2 \times 105$	$2 \times 105$	$2 \times 105$
Working space volume	Approx. 5 litres		

Fig. 1. RC1 Reply

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