

Interactive comment on “In-flight calibration of the Cluster PEACE sensors” by N. Doss et al.

Anonymous Referee #1

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The authors describe the methods by which the Cluster PEACE sensors are calibrated to take into account the decreasing performance of the sensor MCPs with time. The method used to intercalibrate the different anodes of each PEACE sensor is not described. The manuscript is for the most part clear and well-written, and the methods are in general described in sufficient detail. However the manuscript in its current form does raise some minor questions that ought to be addressed before it is published in Geoscientific Instrumentation.

Page 593, Line 14: What is the field-of-view of each PEACE sensor perpendicular to the spacecraft spin axis? Does this have any effect on calibration?

Page 593, Line 23: Polar and Azimuthal should be defined properly here and marked on Figure 2.

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Section 2.3: Does the density depend more strongly on $G_{\alpha \in 0}$ than $\beta_{ik \in (vk^2)_i}$, and does the independence of velocity from $G_{\alpha \in 0}$ mean that $\beta_{ik \in (vk^2)_i}$ can be determined independently from $G_{\alpha \in 0}$? This is important if density comparisons are being used to find α .

Figure 3 & associated discussion: Why does the PHD spread increase with voltage? Is the spread at higher voltage levels small enough that 10 spins are sufficient to fully sample the PHD and hence accurately determine the inflexion point in the cumulative distribution function?

Page 598, line 3: Was it possible to measure the pulse height distributions during ground tests? If so, were they symmetric?

Page 600, line 23 and elsewhere: “S-curve” hasn’t been defined, suggest to define or replace with “identify the inflexion point of the CDF” or similar.

Section 4.1: WHISPER soundings can show up as spikes in the PEACE moments. How was this taken into account? Also the EFW and WHISPER instrument papers should be cited.

Page 603, line 22: What was the result of this validation with WIDEBAND densities, also the WIDEBAND instrument paper should be cited?

Figure 6, upper panel: Y axis label should be ‘normalised count rate’, as per the caption.

Figure 8: ‘ops gain’ should be defined in the caption.

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