



## **Calibration techniques for magnetometers implementing on-board de-spinning algorithms - filling the gaps within the Cluster dataset**

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The Fluxgate Magnetometer experiments on-board the European Space Agency's four spacecraft Cluster Mission have the capability to store sampled magnetic field vectors in the instrument memory, either as a full resolution 'event capture' or as spin-resolution vectors transformed into a non-spinning coordinate system (de-spun). The latter capability has ensured a dataset is available which extends the partial orbital coverage achieved during nominal operations in the first years of operation and was used extensively during the period 2001-2002 before the implementation of full coverage over the whole of the length of the Cluster orbits. The on-board de-spin is achieved using a Walsh function with Haar coefficients and allows for up to 27 hours additional data per non-coverage interval. A number of commissioning orbits were used to verify the accuracy of data collected by the de-spin mode, whereby individual spacecraft were operated separately in a number of standard normal sampling and de-spin mode combinations. Up to the present time, this data has not been available to the Cluster community. We present results here comparing the performance of the on-board de-spin algorithm versus the normal sampling modes over a number of boundary layer crossings, discuss the context in which the data may be usable in future studies and outline plans for data submission to the Cluster Data system.