



DOI Implementation at NASA

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Presented at the 7th IHDEA Meeting, JHUAPL, Laurel MD, USA, October 12-13, 2023

DOI-Digital Object Identifier

- A unique and persistent reference for a digital resource (book, dataset, model, etc.)
- With DOIs, digital resources become citable and referenceable, guaranteeing credit attribution to resource providers.
- At NASA, both SPASE description and DOI are done at the same product level for any *ResourceType* describable by SPASE.
- DOI minting begins by augmenting a SPASE document (in *ResourceHeader*) with *PublicationInfo: Title, Authors, PublicationDate, PublishedBy, and LandingPageURL*; which is followed by registering the resource at [DataCite.org](https://datacite.org) and obtaining a DOI.
- *LandingPageURL* is the *DOI URL* ([https://doi.org/...](https://doi.org/)) that points back at the *SPASE landing page* augmented with the *PublicationInfo* and the *DOI reference*.
- A complete resource reference is then constructed from *PublicationInfo* and the DOI reference.
- NASA uses the full *DOI URL* ([https://doi.org/...](https://doi.org/)) as the *DOI reference*.

DOI-Referenced SPASE Landing Page

Data access protocols

- **FTP**s from the MMS SDC (not with most browsers)
- **HTTPS** from the MMS SDC
- **FTP**s from SPDF (not with most browsers)
- **HTTPS** from SPDF
- **CDAWeb**
- **HAPI: CDAWeb HAPI Server**

Dataset reference with DOI URL and access date stamp

MMS 1 Flux Gate Magnetometer (FGM) DC Magnetic Field, Level 2 (L2), Survey Mode, 8 or 16 Sample/s, v4/5 Data

Russell, Christopher, T.; Magnes, Werner; Wei, Hanying; Bromund, Kenneth, R.; Plaschke, Ferdinand; Fischer, David; Strangeway, Robert, J.; Leinweber, Hannes, Karl; Eichelberger, Hans, Ulrich; Huang, B.G.; Le, Guan; Burch, James, L. (2022). MMS 1 Flux Gate Magnetometer (FGM) DC Magnetic Field, Level 2 (L2), Survey Mode, 8 or 16 Sample/s, v4/5 Data [Data set]. NASA Space Physics Data Facility. <https://doi.org/10.48322/mxbx-r466>. Accessed on 2023-July-14.

ResourceID

spase://NASA/NumericalData/MMS/1/FIELDS/FGM/Survey/Level2/PT0.125S

Description

The Fluxgate Magnetometers (FGM) on Magnetospheric Multiscale consist of a traditional Analog Fluxgate Magnetometer (AFG) and a Digital Fluxgate magnetometer (DFG). The dual magnetometers are operated as a single instrument providing a single intercalibrated data product. Range changes occur at different times on the two instruments so the gains checked each periapsis can be carried out unambiguously to date causes of the any apparent calibration changes. Use of Electron Drift allows accurate monitoring of the zero levels along the rotation axis. Prior to university, Braunschweig, except for the AFG magnetometers on MMS3 and MMS4, which were calibrated at UCLA. Both sets of sensors are operated for the entire MMS orbit, with slow survey (8 samples per second) outside of the Region of Interest (ROI), and fast survey (16 samples per second) inside the ROI. Within the ROI, burst mode data (128 samples per second) are also acquired. A detailed description of the MMS fluxgate magnetometers, including science objectives, instrument description, calibration, magnetic cleanliness program, and data flow can be found at <http://link.springer.com/10.1007/s11214-014-0057-3> (DOI 10.1007/s11214-014-0057-3). Additional information can also be found at <http://www.nasa.gov/mms> (UCLA) and <http://www.iwf.oew.ac.at/de/forschung/erdnahe-weltraum/mms> (WFG, Graz). The MMS 1 FGM Level 2 data product, burst mode data is taken from DFG and survey mode data from AFG. The data is calibrated on an orbit-averaged basis, small differences in offset may be observed between orbits. Based on preliminary analysis, the estimated error is estimated to be no more than 0.1 nT in the spin-plane.

Access date stamp

ResourceID

Updatable SPASE & DOI landing page

LandingPageURL / DOI reference

SPASE metadata release date

Details

NumericalData

ResourceID

spase://NASA/NumericalData/MMS/1/FIELDS/FGM/Survey/Level2/PT0.125S

ResourceHeader

ResourceName

MMS 1 Flux Gate Magnetometer (FGM) DC Magnetic Field, Level 2 (L2), Survey Mode, 8 or 16 Sample/s, v4/5 Data

AlternateName

MMS1_FGM_SRVY_L2

DOI

<https://doi.org/10.48322/mxbx-r466>

ReleaseDate

2023-03-04 12:34:56.789

RevisionHistory

RevisionEvent

ReleaseDate

2021-04-27 15:38:11

Note

Only known prior ReleaseDate of the metadata

RevisionEvent

ReleaseDate

2022-08-04 12:34:56.789

Note

Added DOI and PublicationInfo minted by LFR, updated the ResourceID, updated the SPDF MetadataContact Person to Robert M. Candey, metadata updated to SPASE

Screenshot

- Dataset version can be identified by comparing revision release date and access date stamp.

SPASE landing page,
<https://hpde.io/NASA/NumericalData/MMS/1/FIELDS/FGM/Survey/Level2/PT0.125S.html>

DOI can be minted & used as a *persistent reference* of a resource (dataset, model, etc.).

SPASE landing page + *PublicationInfo* (authors,...) = DOI landing page

DOI URL,
<https://doi.org/10.48322/mxbx-r466>