Rotational Ground Motion Parameters Catalog

Rotational Ground Motion Parameters Catalog – General Description

Ground Motion Parameters Catalog contains data from the Seismic catalog and Rotational Ground Motion Catalog through the event ID. That data format can be made using the application Ground Motion Parameters Catalog builder user guide.

The catalog is a variable in the Matlab format file and it is kept in a file MAT. The structure is an array with named fields that can contain data of various types and sizes. In the file there is only one variable, the file name and variable name are optional. The format of the Rotational Ground Motion Parameters Catalog is prepared in the same manner as the Catalog of seismic events, Ground Motion Catalog, and Ground Motion Parameters Catalog.

The variable describing the catalog is a vector of structures, consisting of fields:

- **field** – name of field in the catalog (text value);
- **type** – type of field in the catalog and way of showing the field (numeric value);
- **val** – column array of values. For the text the column is an array type cell with text fields. For the remaining value, the column is a numeric column.
- **unit** – description of unit for individual data (text value).
- **description** – short description of the parameter (text value).
- **fieldType** – semantic meaning of the field. When some field values are similar/related then fieldType name is entered and for another case [] is entered.

The fundamental is a full catalogue i.e. the variable contains the definitions of all specified fields. When some field values are missing then for the numeric data NaN (not specified) is entered and for the text null [] is entered. In the fields describing the events ("EID", "Time", "Lat", "Long" and at least one of Magnitude), the place of measurement ("RID", "SID", "S_name", "S_Lat", "S_Long", "S_Elevation", "R_time") and at least one of the fields of rotation values in all rows must be present.

Field	Type	Val	unit	description	FieldType	Comments	Data format
EID	3	data vector		Event ID		**required field from Seismic Catalog**	text
Time	5	data vector		Event origin time		**required field from Seismic Catalog**, Matlab serial numerical time	double
Lat	14,15,24,25	data vector	deg	Latitude		**required field from Seismic Catalog** deg – North positive	double
Long	14,15,24,25 ,34,35	data vector	deg	Longitude		**required field from Seismic Catalog** deg – East positive	double
Depth	11-13	data vector	km	Hypocenter depth measured from the ground level		Hypocenter depth counted downwards from surface (positive values below surface)	double
Elevation	13	data vector	km	Hypocenter elevation measured over the sea level		Hypocenter elevation counted upwards from sea level (positive values above sea level, negative values below sea level)	double
Mw	4	data vector		Moment magnitude	'Magnitude'	**required field from Seismic Catalog when any other Magnitude is unavailable**	double
ML	4	data vector		Local magnitude	'Magnitude'	**required field from Seismic Catalog when any other Magnitude is unavailable**	double
RID	3	data vector		Registration ID		**required field. ID must be linked to the name of the rotational signal**	text
SID	3	data vector		Station ID		**required field**	text
S_name	3	data vector		Station name		**required field**	text
S_Lat	24,25	data vector	deg	Station latitude		**required field**	double
S_Long	24,25,34,35	data vector	deg	Station longitude		**required field**	double
S_Elevation	10	data vector	m	Station elevation		**required field**	double
Epicentral_dist	22	data vector	km	'Epicentral distance between event and station'		**required field**	
R_Time	5	data vector	days	Registration occurrence time		**required field**	double
PRV_E	13	data vector	rad/s	Peak ground rotational velocity of E component	PRV	**required field**	double
PRV_N	13	data vector	rad/s	Peak ground rotational velocity of N component	PRV	**required field**	double

PRV_V	13	data vector	rad/s	Peak vertical ground rotational velocity	PRV	**required field**	double
PRV_H	13	data vector	rad/s	Peak horizontal ground rotational velocity	PRV		double
PRV	13	data vector	rad/s	Total peak ground rotational velocity	PRV		double
PGA_E	13	data vector	m/s^2	Peak ground acceleration of E component	PGA		double
PGA_N	13	data vector	m/s^2	Peak ground acceleration of N component	PGA		double
PGA	13	data vector	m/s^2	Total peak ground acceleration	PGA		double
PVA	13	data vector	m/s^2	Peak vertical acceleration	PGA		double
PHA	13	data vector	m/s^2	Peak horizontal acceleration	PGA		double

Table 1. The general parameters in catalog MAT format.

Except for the general parameters described in the table above, the Rotational Ground Motion Parameters Catalog can contain other parameters in accordance with the Seismic Catalog, the Ground Motion Catalog or the Ground Motion Parameters Catalog.

The Numbers of Data type:
1 – the real data without limits,
2 – the integer data,
3 – text value,
4 – the real number rounded to 0.1 (shown as 11),
5 – time in Matlab format serial time – the time display format; seconds with accuracy 1/10,
6 – the real data display in an engineering manner with one decimal place, e.g.: 3.5E6, (obsolete, recommended 2cd)
7 – the real data display in an engineering manner with two decimal place, (obsolete, recommended 2cd)
bc – (b and c are code digits) the real data display in fix-point manner with at minimum b places before decimal and c decimal place
e.g. For number 3.149.
10: „3”
11: „3.1”
12: „3.15”
20: „03”
23: „03.149”
1bc– the same manner as bc, but with place for a sign (space for sign „+”, sign - for sign „-”)
2cd– (c and d are code digits), the real data is displayed in an engineering manner, with place for a sign (space for sign „+”, sign ‘-’ for sign „-”), with c decimal place and exponent expressed by d places. The sign in exponent is always displayed.
e.g. For number 0.001:
211: „1.0E-3”
221: „1.00E-3”
212: „1.0E-03”
222: „1.00E-03”
e.g. For number 1000:
211: „1.0E+3”
221: „1.00E+3”
212: „1.0E+03”
222: „1.00E+03”

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