

Rotational Ground Motion Catalog

Rotational Ground Motion Catalog – General Description

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 catalog is made in the same manner as a catalog of seismic events.

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 the 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 catalog 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 "ID", "Time" and at least one of the fields of rotation values in all rows must be present.

Field	Type	Unit	Description	FieldType	Comments	Data format
RID	3		Registration ID		required field. ID must be linked to name of signal accelerogram	text
EID	3		Event ID		required field. ID should be linked to catalog EID	text
Time	5		Event origin time		required field , Matlab serial numerical time	double
SID	3		Station ID		required field	text
S_name	3		Station name		required field	text
S_Lat	24,25	deg	Station latitude		required field	double
S_Long	24,25,34,35	deg	Station longitude		required field	double
S_Elevation	10	m	Station elevation		required field	double
R_Time	5	days	Registration occurrence time		required field	double
PRV_E	13	rad/s	Peak ground rotational velocity of E component	PRV	required field	double
PRV_N	13	rad/s	Peak ground rotational velocity of N component			double
PRV_V	13	rad/s	Peak vertical ground rotational velocity			double
PRV_H	13	rad/s	Peak horizontal ground rotational velocity	PRV		double
PRV	13	rad/s	Total peak ground rotational velocity	PRV		double
PGA_E	13	m/s^2	Peak ground acceleration of E component	PGA		double
PGA_N	13	m/s^2	Peak ground acceleration of N component	PGA		double
PGA	13	m/s^2	Total peak ground acceleration	PGA		double
PVA	13	m/s^2	Peak vertical acceleration	PGA		double
PHA	13	m/s^2	Peak horizontal acceleration	PGA		double

Table 1. The general parameters in catalog MAT format.

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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