

File: ISIS-PG-FMT501_parXX_dat.pdf

Description of 'parXX.dat'; Randlsq Program Parameter Input format, where XX denotes the run-number ID for the best-fit solution from RAND, which was retained for that particular body. These run-number IDs are fortunately unique between each of the measured Saturnian moons such that XX: 03=Mimas, 04=Dione, 05=Iapetus, 06=Tethys, 07=Rhea, 14=Enceladus. Note, this input format is identical to the Randlsq program output file format.

Created as part of a project to put planetary geodesy control networks on the web. These control networks are from ISIS Planetary Geodesy Software (formerly RAND/USGS Planetary Geodesy (RUPG) Software).

Version: 2015.10.05

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Filename: parXX.dat (example: par04.dat)

Description: Primary input of randlsq program flow parameters. This version is for now standard 7 character control point names, although was originally only for lunar solutions.

File format:

Group 1 (1 record, note 2):

Name	Columns	Format	Description (units)
npic	1-5	I5	Number of images (unitless).
npoi	6-10	I5	Number of control points (unitless).
nmea	11-15	I5	Number of measurements (unitless).
nit	16-20	I5	Number of iterations of solution (unitless). Note 7.
iout	21-25	I5	If iout=0, then an output pole, points, and picture file is not produced. If iout=1, then an output pole, points, and picture file is produced.
ntot	26-30	I5	Number of types of variables for which a solution is required. The variable types are given below under group 3 input.
nsw	31-35	I5	Number of single variables to be weighted (unitless).
isol	36-40	I5	If isol=1 then individual radii are used at control points. If isol=2, then a single body-wide radius is used. If isol=3, then a tri-axial ellipsoid is being used (and the "pole, points, and picture" file must have apriori values for these).

iew 41-45 I5 If iew=0, then east longitudes are used. If iew=1, then west longitudes are used.

list 46-50 I5 If list=0, then output is directed to the terminal. If list=1, then output is direct to a user-specified file.

Sample (from par04.dat):

=> 28 123 658 4 1 5 0 1 1 1<=

Group 2 (1 record):

Body 1-10 A10

Allowable names Name of the target planetary body (all are uppercase and left justified).

ADRASTEIA
AMALTHEA
ARIEL
CALLISTO
DIONE
ENCELADUS
EUROPA
GANYMEDE
GASPRA
IAPETUS
IDA
IO
MARS
MERCURY
METIS
MIMAS
MIRANDA
MOON
OBERON
PHOEBE
RHEA
TETHYS
TITANIA
THEBE
TITAN
TRITON
UMBRIEL

Sample (from par04.dat):

=>DIONE<=

Group 3 ("ntot" records):

Idtot 1-5 I5 Variable type for which a solution is required. Possible types are:

1: latitude of point (degrees)
2: longitude of point (degrees)
3: radius of point (km)
4: alpha angle of C matrix (degrees)
5: delta angle of C matrix (degrees)
6: kappa angle of C matrix (degrees)
7: right ascension of pole (degrees)
8: declination of pole (degrees)
9: rotation rate of pole (degrees/day)
10: a-axis of ellipsoid (km)
11: b-axis of ellipsoid (km)
12: c-axis of ellipsoid (km)
13: ellipsoidal longitude offset (degrees)

Sample (from par04.dat, with free radii for all points):

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=> 1 -38 <=  
=> 2 -38 <=  
=> 4 -38 <=  
=> 5 -38 <=  
=> 6 -38 <=
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Notes:

1. Currently read from randlsq program unit 11.
2. This record was read with a "(I6,11I5)" format by the weighter2.f (Mars control network) program, which has been superseded by the randlsq.F program.
3. Lines beginning with a "#" will eventually be treated as comments.
4. If use of a ground point file is specified as a randlsq program parameter, the radii will be fixed via weighting, on the assumption that if radii are available for any points, they should be available for all points (and should be set as a priori values).
5. In (mostly test) versions of randlsq.F before 2005.11.17, this value was treated as the actual weight to be applied (rather than the uncertainty). Unfortunately most lunar (Clementine) control network runs (from 2004.08 to 2005.11) had assumed this was the uncertainty, when in fact it was used as the weight itself, and therefore need to be treated with caution. BA, 2005.11.17.
6. In versions of randlsq.F after about 2005.11 (and special Clementine solution versions before that) point weights can be set individually in the poles, points, and positions file, and the angle weights can be set for each type of angle if iawt.eq.1. In either case, these weights will override any set here using the gweight or sweight values. However, a bug currently exists that the old listing of these RAND style weights at the top of the residual output file (under "WEIGHTS") will incorrectly still list these weights as being the ones applied when they are not. BA, 2005.12.27.
7. If the number of iterations is 1, as a minor bug, the names of the parameters will be blank in any parameter uncertainty output, since they are not set until the end of the first iteration. BA, 2006.02.20.

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Reference: Model, program, and format generally follow that specified in:

Colvin, Tim R. (1992). "Photogrammetric Algorithms and Software for
Spacecraft Optical Imaging Systems," A RAND NOTE, N-3330-JPL.

Note that the original format indicates the use of 5 character control
point names.

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Document History:

Begun 2006.08.10 by B. Archinal, based on RUPG-FMT5032.doc.

Modifications: Modified 2015.10.05 by G. Cushing for web release.

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(End of document.)