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THE AT CATALOGUE

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1 OVERVIEW

The AT catalogue consists of two separate databases: AT_CAT and SOURCE_CAT. SOURCE_CAT is a conventional astronomical catalogue composed of a small number of well-known and frequently-accessed astronomical catalogues. AT_CAT is a record of all observations made (or to be made) on the AT, together with specific information on calibrator sources.

2 DEFINITIONS

2.1 RDB Jargon

These catalogues use RDB, so that searches and other manipulation of data may be done fairly painlessly. Most of this document may be understood with no knowledge of RDB, given the following informal definitions:

1. A RELATION is what might colloquially be called a table, I.e. a star catalogue might be stored as one relation.

2. A FIELD corresponds to one column in that table.

3. A RECORD corresponds to one line in that table.

4. Unlike a table, RDB databases can effectively be n-dimensional, by using several orthogonal but intersecting relations. This is the origin of otherwise obscure comments about creating extra relations for several frequencies, etc.

2.2 Source Names

The following is copied from a separate AT note (in which the choice is justified) in preparation:

Each source observed on the AT will be assigned a 15-character name in the format:

hhmmss.s±ddmmss

where hhmmss.s represents the J2000 RA, and ddmmss represents the J2000 dec. These names, which are consistent with the latest IAU recommendation, will be used within all AT software to define the

source uniquely. Other names, such as 3C273, Orion-A, 2134+004, will be stored as aliases. In all software that communicates with the observer, the observer may refer to a source by its alias rather than the AT name.

2.3

3 OBSERVATION STRUCTURE

The following is also taken from the separate AT note in preparation:

Figure 1 shows the structure of an observation. The largest unit is a PROJECT, which is defined by a proposal. This project may include many sources, frequencies, or array configurations. The project consists of a number of OBSERVATIONs. Each of these may typically be 12 hours long, and represents a continuous period of time assigned to a project on one array. Each observation consists of a number of SCANs, which may typically be 10 mins long. Each scan represents a continuous observation of one source. The scan in turn is divided into INTEGRATIONS and CYCLES, each of which have a typical duration of a few seconds.

The following assumptions implicit in these definitions should be noted.

1. During an OBSERVATION (typically 12 hours), the project number and array configuration are unchanged.

2. During a SCAN (typically 10 mins), the source, bandwidth, and number of channels per baseline are unchanged, although the frequency may change.

3. During an INTEGRATION (typically 10 s), all observing parameters are held constant.

4 THE AT SOURCE CATALOGUE

4.1 Introduction

The AT source catalogue (database pathname SOURCE_CAT) is a compilation of astronomical source catalogues. It does not attempt to include all known source catalogues, but merely those which are thought to be sufficiently useful to be accessible at all times through the database. It is designed to fulfil three functions:

1. When preparing an observation for the AT, an observer should be able to specify a source name (e.g. Orion-KL, IRAS00085-321) and the AT scheduler will be able to recover the coordinates from the database.

2. An astronomer wishing to select sources from a catalogue (e.g selecting survey sources according to some criteria) may do so relatively easily using the database system.

3. It also enables rapid access to any of the constituent catalogues for refernce purposes. In the case of the IRAS catalogue, this includes material (e.g. source identifications) which are not available on the microfiche version.

The relations and their fields will not be described here in detail, as they simply correspond more or less to the tables in the catalogues. The only exception is the ALIAS relation, which is made seperate from the other parts of the catalogues for reasons associated with Rdb philosophy.

4.2 The Constituent Relations

The following relations are included in the database:

IRAS	The IRAS point source catalogue
BOLOGNA	The Bologna redshift survey
MOLONGLO	The Molonglo catalogue
PARKES	The Parkes catalogue
PN	Planetary nebulae in the Galaxy and Magellanic clouds
ALIAS	A list of source identifications matched to AT-type names

5 THE AT OBSERVATION CATALOGUE

5.1 Summary

The AT observation catalogue (database pathname AT_CAT) is a compilation of observations which have been made, or are to be made, on the AT. It contains the following relations:

SOURCE	A list of sources and their J2000 positions
ALIAS	Other names for the sources
CALIBRATOR	Information on known calibrator sources
OBSERVATION	A record of which observations have, or are to be, made.
SCAN	Details of each scan in the observation

5.2 The SOURCE Relation

This simply gives the source position. If there is more than one entry for a source, software will always choose the most recent entry

unless explicitly instructed otherwise.

DATE	Date of entry	TEXT 18
NAME	hhmmss.s-ddmmss	TEXT 15
RA	J2000 radians	G_FLOAT
DEC	J2000 radians	G_FLOAT

5.3 The ALIAS Relation

This is used to translate from a well-known name (e.g. 3C273) to the AT name. Note that one source may have many ALIAS records.

DATE	Date of entry	TEXT 18
NAME	hhmmss.s-ddmmss	TEXT 15
ALIAS	other name	TEXT 15

5.4 The CALIBRATOR Relation

This contains the following fields:

DATE	Date of entry	TEXT 18
ACTIVE_FROM	Active from date	TEXT 18
ACTIVE_TO	Active to date	TEXT 18
NAME	Name (hhmmss.s+ddmmss)	TEXT 15
BAND	Freq. band (L,S, etc)	TEXT 1
I	Value of Stokes param I	REAL
Q	Value of Stokes param Q	REAL
U	Value of Stokes param U	REAL
V	Value of Stokes param V	REAL
UVMIN	Min UV at which useful	REAL
UVMAX	Max UV at which useful	REAL
POSN	Position calibrator?	TEXT 1
FLUX	Flux calibrator?	TEXT 1
POLN	Polarisation cal?	TEXT 1

Note that each calibrator source has one record for each AT frequency band.

5.5 The Observation Relation

This gives the data for each observation (typically 12 hours) and has the following fields:

DATE	Date of entry	TEXT 18
OBS_NO	Observation serial no.	SIGNED WORD
STATUS	See below	TEXT 8
START	Starting date/time	TEXT 18

STOP	Stopping date/time	TEXT 18
ARRAY_ID	ID of array/config	TEXT 8
PROJECT	ID of project	TEXT 8
NOTES		SEG.STRING

5.6 The Scan Relation

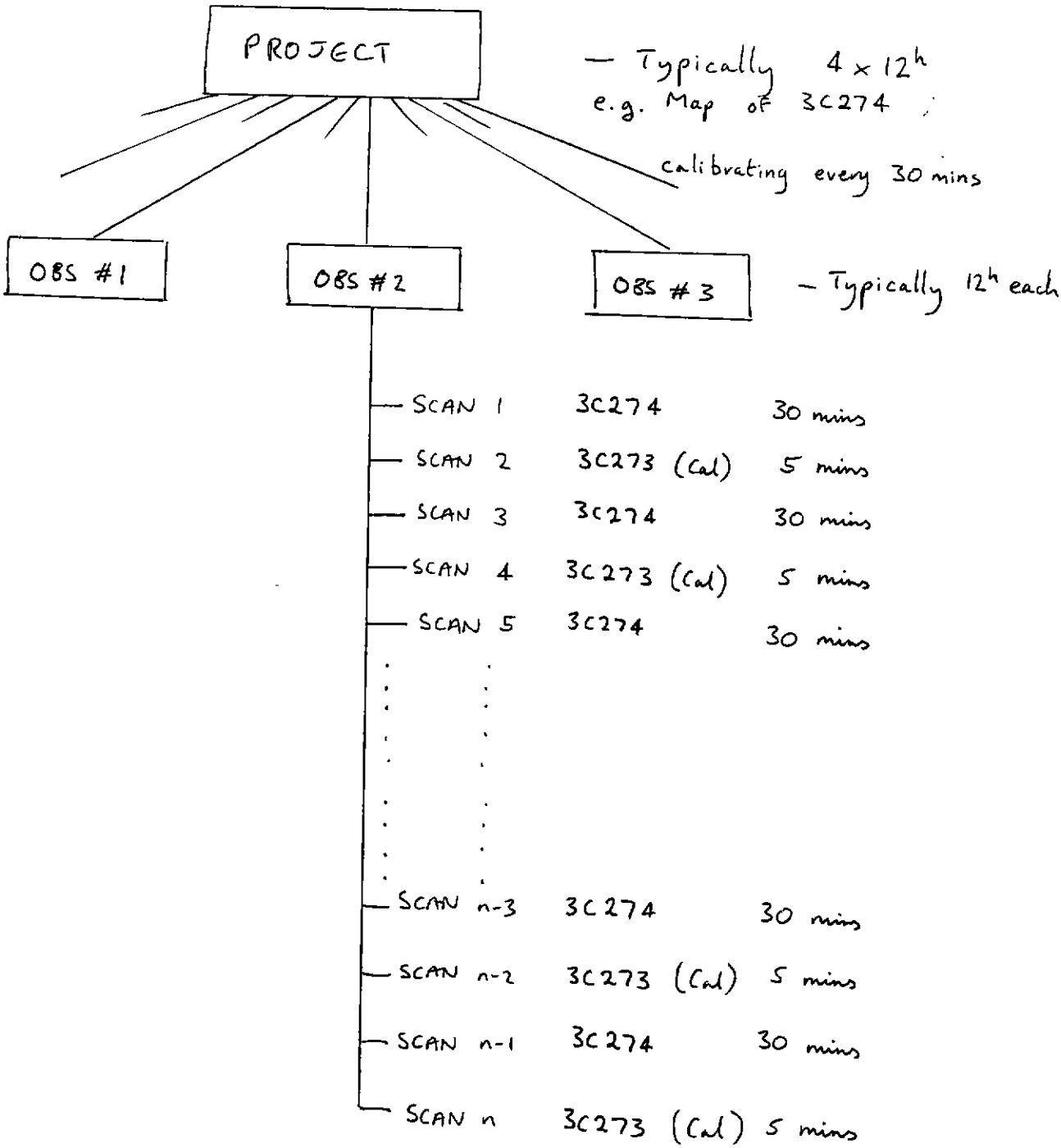
This gives the data for each scan (typically 10 minutes) and has the following fields:

DATE	Date of entry	TEXT 18
OBS_NO	Observation serial no.	SIGNED WORD
STATUS	See below	TEXT 10
START	Starting date/time	TEXT 18
STOP	Stopping date/time	TEXT 18
NAME	Source name	TEXT 15
BW	Bandwidth/baseline	REAL
NCHAN	Channels/baseline	SIGNED WORD
FREQ1	Centre freq for IF1	REAL
FREQ2	Centre freq for IF1	REAL
FREQ3	Centre freq for IF1	REAL
FREQ4	Centre freq for IF1	REAL
VELOC	Doppler Velocity	REAL
VELOC_CODE	Optical, LSR, etc.	TEXT 8

Notes:

1. The field STATUS might contain keywords such as 'PROPOSED', 'SCHEDULED', 'COMPLETED', 'ABANDONED'

2. If thought necessary, the fields BW and NCHAN could also be expanded to enable separate values for each frequency band. In this case, a separate BANDS relation for each scan would probably be justified.



NB Frequency and bandwidth might also be changed from Scan to Scan E.g. when observing different maser transitions.

Fig. 1: Structure of an Observation

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