Preparing for observing

4 In advance of your observing run . 17

5 Planning your observing . . . . . 19
  5.1 Typical Observing Sequence . 19
  5.2 Overheads . . . . . . . . 19

6 Preparing field description files (FLDs) for Configure . . . . . . . . 21
  6.1 General Guidelines for FLD Files . . . . . . . . . . . . . . 21
  6.2 Guide Stars . . . . . . . . 22
  6.3 Format . . . . . . . . . . 23
  6.3.1 Header . . . . . . . . . 23
  6.3.2 Columns . . . . . . . . 24
  6.3.3 Example FLD file . . . . 25

7 Using Configure . . . . . . . . . 27
  7.1 Installing Configure . . . . 27
  7.2 Running Configure . . . . . 27
    7.2.1 Updating the 2dF Distortion Model . . . . . . . . . 27
    7.2.2 Starting the Software . . . . 28
    7.2.3 Allocation Options . . . . 29
    7.2.4 Additional Expert allocation options . . . . 30
  7.3 Wavelength Optimising Fibre Placement . . . . . . . . 32
Chapter 4

In advance of your observing run

1. Contact your support astronomer (see the AAT Schedule). Make sure you discuss with them:
   - What your program is and your observing strategy, including exposure times;
   - Recent performance of the instrument (e.g., how fast will field reconfiguration times be for 2dF);
   - Any questions you have about observation description files, which must be prepared in advance (e.g., .FLD files for 2dF, finder charts for KOALA, observing scripts, etc.);
   - Which particular mode/setup you plan to use for your program.
   - When you will be arriving at the telescope or remote observing site.

2. Fill out your Travel Form, regardless of whether you will be observing remotely or at the AAT. This allows the AAO to make appropriate reservations, etc.

3. Read this documentation, especially Parts II: Preparing for observing and III: Observing with 2dF–AAOmega. Users of 2dF must be prepared to use configure at the telescope.

4. You should plan to arrive early, preferably the day before your first night on the telescope, especially if this will be your first observing run with this particular instrument/telescope. This will give you time to discuss your program with your support astronomer in detail, familiarise yourself with the data reduction software, and the computing and observing system at the telescope or remote observing site.

5. If observing with 2dF, prepare your .FLD configuration files. If observing with another instrument, prepare finding charts for your targets. Preparing .FLD files is a complex task, and should not be left until the last minute.

Astronomers are strongly encouraged to reduce their data in real time at the telescope. Although such “quick-look” reductions often require revisiting afterwards, they are crucial to ensuring the best quality data is obtained. AAOmega and HERMES data are reduced using the 2dfdr software environment. Reduction facilities are available at the AAT and via the remote observing system, but users may wish to download and run the software e.g., on their laptop. The 2dfdr webpage provides all necessary links and information for the data reduction task.
Chapter 5

Planning your observing

To maximise the efficiency of your observations, you should plan what data you will need, and what order it will be taken in. This chapter will help you determine what data are needed.

5.1 Typical Observing Sequence

1. **BIAS** – BIAS frames are taken every month and will be provided by your support astronomer. Discuss whether these are required with your support astronomer.

2. **DARKS** – DARK frames are important for faint targets. These are taken every month and will be provided by your support astronomer. Discuss whether these are required with your support astronomer.

3. **FIBRE FLAT** — For tracing individual fibre spectra across the CCD, and some flatfielding.

4. **ARC** — For wavelength calibration.

5. **OBJECT frames** – These should be split up into at least 3 separate exposures so that cosmic rays can be removed by the reduction software.

6. **OFFSET SKIES**. These are used for fibre throughput and normalisation of sky fibres. These calibration frames are crucial for high resolution blue data that does not cover the $\lambda5577$A sky line. For most fields, these can be taken 20–30 arcsec from the field, though for crowded fields (e.g. LMC or a globular cluster), larger offsets should be done. It is recommended to take 3 of these, offsetting 20–30 arcsec each time, since often stars will land in one or more fibres. With AAOmega, if a setting has been chosen which includes strong night sky lines (and $\lambda5577$A is the only one in the blue) then one may dispense with these observations as calibration will be performed from the sky lines. However, for strong continuum objects, the sky lines become unmeasurable and so attention must be paid to ones data in this situation and a judgement call made on the need for offset sky frames.

5.2 Overheads

Table 5.1 gives the exposure times of the relevant arc and flat lamps for various gratings. Readout times are 120s. Generally changing from one field to the next, including taking arc and flat frames, will take at least 12 minutes.
Table 5.1: Arc & Flat Setups and Exposure Times. Lamps are changed from time to time. Check carefully for saturation effects at the start of any new AAOmega run.

<table>
<thead>
<tr>
<th>Grating</th>
<th>Date</th>
<th>Lamps</th>
<th>Exposure [sec]</th>
<th>Lamps</th>
<th>Exposure [sec]</th>
</tr>
</thead>
<tbody>
<tr>
<td>580V</td>
<td>March 2012</td>
<td>CuAr, FeAr, He, Ne</td>
<td>30</td>
<td>20W</td>
<td>6</td>
</tr>
<tr>
<td>385R</td>
<td>March 2012</td>
<td>CuAr, FeAr, He, Ne</td>
<td>30</td>
<td>20W</td>
<td>4</td>
</tr>
<tr>
<td>1700B</td>
<td>Nov 2006</td>
<td>CuAr, FeAr, ThAr, He, Ne</td>
<td>120</td>
<td>20W</td>
<td>20</td>
</tr>
<tr>
<td>1000R</td>
<td>Nov 2006</td>
<td>CuAr, FeAr, ThAr, He, Ne</td>
<td>120</td>
<td>20W</td>
<td>20</td>
</tr>
<tr>
<td>1700D</td>
<td>Jul 2011</td>
<td>CuAr, FeAr, ThAr, He, Ne</td>
<td>120</td>
<td>50W</td>
<td>5</td>
</tr>
<tr>
<td>1500V</td>
<td>Jul 2011</td>
<td>CuAr, FeAr, ThAr, He, Ne</td>
<td>120</td>
<td>50W</td>
<td>120</td>
</tr>
<tr>
<td>3200B</td>
<td>Jul 2011</td>
<td>CuAr, FeAr, He, Ne</td>
<td>700</td>
<td>75W A</td>
<td>150</td>
</tr>
<tr>
<td>2000R</td>
<td>Jul 2011</td>
<td>CuAr, FeAr, He, Ne</td>
<td>120</td>
<td>20W</td>
<td>40</td>
</tr>
</tbody>
</table>
Chapter 6

Preparing field description files (FLDs) for Configure

The configure program takes as input a text file that describes all possible targets to be observed. The file is usually referred to as an “FLD” file after the regular .fld extension in the filename. General guidelines and suggestions for FLDs are discussed first, followed by instructions for including guide stars, and finally a description of the format is given. All of this information is critical to the success of a program, so pay careful attention.

How to run the configure program is described in Chapter 7: Using Configure.

6.1 General Guidelines for FLD Files

Science targets No more than 800 targets and these should cover a relatively small range in target magnitude (less than 3 mags is the standard constraint, but talk to your support astronomer if you require more detail here).

Calibration sources If required, these should be set to Priority 9 in the .fld file with the priority of all science targets shuffled to lower levels so that the calibrators are always allocated.

Sky fibre positions You will need 20-30 sky fibres in the observation, so 50-100 possible sky positions should be enough. Eyeball the sky fibre positions to check they are actually blank regions.

Standard star calibrators We have had some success recently in including a small number (1-2 objects per configuration) of standard star calibrators in 2dF fields. These must be chosen to be faint, to avoid contaminating science spectra. Drawing the calibrators from the recent sample of White Dwarfs and Hot Sub-Dwarfs of Eisenstein et al. ApJS, 2006, 167, 40 from SDSS has worked well. Absolute flux calibration is not possible with a fibre system such as 2dF/AAOmega, due to the unquantifiable aperture losses in any given observation, but including a standard star in each field plate observation can improve the quality of internal spectral calibration, and monitor data quality during a run. All caveats relating to astrometric accuracy apply to calibrator data as well as science and guide data.

Assigning Specific Wavelengths to specific targets The telescope’s Positioner GUI also handles atmospheric refraction effects when working out the positions of fibres on the field plate - including the effects caused by different observation wavelengths. Normally a single wavelength is chosen for all fibres and is applied by the support astronomer. However, it is possible that you may prefer to have fibres configured for different wavelengths.
It is now possible to specify up to 9 different wavelengths in the .fld file (also shown in the example.fld file).

**A warning on the use of target priorities** Configure is very good at allocating targets based on the 9 possible priority levels (9 is highest priority). However, the user should exercise some restraint when using the available levels. Using all of the available priorities to derive a complex priority selection function will almost always yield very limited returns at the expense of usability. For most programs the number of targets in a given .fld file must be restricted (as described above) in order to allow the configuration process to be completed in an appropriate amount of time (20mins). A field that is stacked with a large number of low priority targets will take a long time to configure. If these targets are indeed low priority then the user should consider carefully whether their inclusion is worth the overhead in configuration time they will incur.

### 6.2 Guide Stars

Guide stars (fiducials) are crucial to the success of your observations so pay careful attention here. Guide stars not only are used to guide the telescope, but also determine the field plate rotation, and set the relative position of the science fibres on the sky. Poor choices may mean that no light falls on science fibres!

- **AAOmega** has eight guide bundles available. All eight should be allocated wherever possible. This will require 20-30 or more candidate guide stars **well distributed** across the field plate to ensure all guide fibres can be allocated and prevent guide star selection compromising science fibre placement.

- **Guide stars** as bright as 8th magnitude in V can be used, but typically stars in the range 12–13.5 are best. Fields closer to the moon will require brighter stars. Stars fainter than 14th magnitude in V are typically too faint.

- The range in guide star magnitude should be made as small as possible to that all guide bundles are evenly illuminated. In practice, less than 1 mag is a good range, and 0.5 mag is best.

- **Guide stars MUST** be on the same astrometric system as your targets. Otherwise, you will likely place your science fibres on blank sky.

- Be aware of proper motions, particularly in brighter guide stars. Including proper motions in your FLD file is highly recommended.

Below are several warnings when choosing guide stars.

- Simply selecting some bright guide stars from SIMBAD or GSC is NOT going to work, your astrometric solution MUST be the same for the guide stars AND the targets, and good to 0.3arcsec or better. This is a requirement for AAOmega observations.

- UCAC-2 and 2MASS sources have proved successful in recent years, although the USNO survey seems to be somewhat inconsistent (probably due to plate boundary effects).

- SDSS is an obvious source of guide stars. However, all stars need to be eyeballed as SDSS has funny artifacts at the magnitudes required here. Marginally saturated stars, which do not suffer obvious defects on examination, have been found to still give excellent results with AAOmega (the SDSS astrometric data for these objects actually comes from smaller edge CCDs so the stars do not actually saturate in their astrometric reference frame).
• **Eyeball your guide stars.** Reject galaxies, reject binaries, reject objects with junk magnitudes. Stars should **NOT** be used blindly (guide globular clusters are next to useless and stars should not have spiral arms).

• The target and guide star astrometry **MUST** be on the same system. Simply using two different catalogues that independently claim to be J2000 will result in poor acquisition and low throughput.

An interesting paper on the effects of poor astrometry on Signal-to-Noise is **Newman, P.R. 2002 PASP 114 918**

### 6.3 Format

An FLD file is a structured text file with two parts. The first part is a header. The header consists of keywords which determine certain characteristics of the whole field, such as field centre, and also can affect how the rest of the file is interpreted by the software. The second part consists of a white-space separated table of potential targets for observing. Each line can have up to 256 characters, and comments can be indicated using either an asterisk (*) or hash (#) character. Special characters, particularly quotes, should be avoided.

#### 6.3.1 Header

The header consists of a set of keyword – value pairs, one per line. The keyword is first on the line, and separated from its value by a space. Everything after the space to the end of the line is taken to be the value. The keywords are:

- **LABEL** A string giving the target field label (which will be stored in the header). May include spaces.

- **UTDATE** The UT Date of observation. In practice the date is not important because configure assumes the field will be observed when overhead (±4 hours). The format is `yyyy mm dd.dd`. The `.dd` portion is optional, and specifies the time as a fractional part of the day.

- **CENTRE** Field Centre R.A. and Dec. The format is `hh mm ss.ss -dd mm ss.s`. The sexagesimal rounding must be correct: `22 60 34.5` is an error, as is `22 45.3` (i.e., no seconds and decimal minutes).

- **EQUINOX** Coordinate equinox for the rest of the file, e.g., J2000.0 (optional, defaults to J2000.0).

- **ARGUS** *not used for 2dF*

- **WLENn** Defines specific wavelengths for individual target positioning optimisation¹. Can be repeated up to nine times, where `n` is from 1 to 9. The wavelength must be specified in angstroms and in the range 3000Åto 10000Å(optional).

- **PROPER MOTIONS** Determines if the input file includes proper motions (optional, does not take a value.)

---

¹WLEN does not determine the central wavelengths of the spectrograph
6.3.2 Columns

Any non-comment line that does not start with one of these keywords will be assumed to signal the start of the target list. Columns of the target list are separated by one or more spaces. Each line ends with a comment column, which can include spaces. The equinox of all coordinates given in the file must be that specified in the EQUINOX line.

The columns are:

Name  The name of the object. The name cannot contain spaces, but underscores are acceptable.

Right ascension in the format $hh \ mm \ ss.ss$. The sexagesimal rounding must be correct: 22 60 34.5 is an error, as is 22 45.3 (i.e., no seconds and decimal minutes).

Declination in the format $-dd \ mm \ ss.s$. As above, the sexagesimal rounding must be correct.

Position type One character indicating the type of object: $P$ — program/science target, $S$ — blank sky, $F$ — guide star. If a $WLEN$ item has been defined in the header, that wavelength is assigned to a program target using $P_wn$ in place of the $P$, and with the $n$ corresponding.

Target Priority (1-9) with 9 being the highest priority. If you are not using priorities you should set all priorities to the same value, say 1. Guide stars and sky regions should be set to 9.

Magnitude The magnitude of the object in format $mm.mm$. This is used for diagnostic plots within the data reduction software, and is not critical to observing.

Program Id This is an integer uniquely identifying a specific project. This is ignored, but must not be omitted.

Proper motion in RA If the PROPER_MOTIONS keyword is listed in the header, then this column contains the east-west proper motion in arcseconds on the sky per year. A proper-motion correction is made at the time of configuring (immediately before observing) for the position of the object. If the PROPER_MOTIONS is not set, then this column should be omitted.

Proper motion in DEC Same as above, but for declination/north-south direction.

Comment Any remaining text up to the end of the line is taken as a comment, and will be included in the output FITS fibre table. Some additional instructions can be included using special keywords in the comment field, and are described in the configure manual available from your support astronomer.

---

2 If no wavelength is assigned here, the default wavelength, which is set at the time of observation, is used. All fibres with specific wavelengths will be positioned optimally for that wavelength and the observed .fits files have a “WLEN” field in the fibre information table that indicates the actual wavelength the object was configured for.

3 Many catalogues give the proper motion in RA coordinates, and not arcseconds on the sky. Therefore, right ascension proper motions from, e.g., UCAC4 must be divided by the cosine of the declination.
6.3. Example FLD file

* A comment about this file
# Another comment!
LABEL My favourite field
UPDATE 2013 1 1
CENTRE 21 00 00 -20 00 00
EQUINOX J2000
PROPER_MOTIONS
WLEN1 4500
WLEN2 8600

# Proper motions in arcsec/year

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>R. Ascession</th>
<th>Declination</th>
<th>Prog</th>
<th>Proper Motion</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>347-187448</td>
<td>+20 59.893</td>
<td>-20 39.425 P</td>
<td>9 13.8</td>
<td>-0.0073 -0.0150</td>
<td>A nice star</td>
<td></td>
</tr>
<tr>
<td>354-188889</td>
<td>+21 02 41.304</td>
<td>-19 15 45.385 P</td>
<td>9 13.0</td>
<td>0.0344 -0.0339</td>
<td>A nicer star</td>
<td></td>
</tr>
<tr>
<td>349-186707</td>
<td>+20 56 30.735</td>
<td>-20 14 04.764 P_w1</td>
<td>9 11.6</td>
<td>0.0017 -0.0004</td>
<td>feat. at 4500A</td>
<td></td>
</tr>
<tr>
<td>353-190083</td>
<td>+21 02 15.107</td>
<td>-19 30 55.424 P_w2</td>
<td>9 13.6</td>
<td>-0.0261 -0.0252</td>
<td>Calcium Triplet</td>
<td></td>
</tr>
<tr>
<td>351-189626</td>
<td>+20 58 04.132</td>
<td>-19 49 03.594 P1</td>
<td>9 12.2</td>
<td>0.0124 -0.0262</td>
<td>Random galaxy</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 7

Using Configure

The configure software is used to allocate fibres to targets while respecting the physical constraints of the hardware. The same version is used for AAOMega, HERMES, 2dF, 6dF, and Ozpoz. The current version of Configure implements a Simulated Annealing (SA) algorithm. The advantages of SA are explored thoroughly in Miszalski, Shortridge and Saunders et al. (MNRAS, 2006, 371, 1537), and are summarized in an article in the February 2006 AAO Newsletter.

For users who do not wish to use Simulated Annealing, a version of configure which uses the original “Oxford” algorithm is also packaged with Configure 7.3 and later packages.

7.1 Installing Configure

The latest version of configure can be downloaded from the AAO’s ftp site:

All you have to do is expand the appropriate gzipped (.tar.gz) file into a convenient directory on your system:

```
tar -zxvf configure-8.1.Linux-Intel64bit.tar.gz
```

7.2 Running Configure

7.2.1 Updating the 2dF Distortion Model

NOTE: This is only required when running configure away from the AAT. The software at the AAT automatically uses the latest files.

To correctly allocate fibres to science targets, configure must have an up-to-date model for the 2dF astrometry, and knowledge of which fibres are functioning. Both of these change regularly (whenever the poscheck is redone or a fibre is broken/repaired). These files are therefore not included with the distribution of configure and should be updated regularly. The necessary files can be fetched by anonymous ftp from the AAO:

```
```

The files required are listed in Table 7.1.

Place these files in the same directory as the configure executable before starting the software.\(^1\)

---

\(^1\)In addition to the directory containing configure, the software also looks in the directory given by the CONFIGFILES environment variable.
CHAPTER 7. USING CONFIGURE

Table 7.1: 2dF Distortion Model Files.

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tdflinear0.sds</td>
<td>Plate 0 Linear Coefficients</td>
</tr>
<tr>
<td>tdfdistortion0.sds</td>
<td>Plate 0 Distortion Information</td>
</tr>
<tr>
<td>tdflinear1.sds</td>
<td>Plate 1 Linear Coefficients</td>
</tr>
<tr>
<td>tdfdistortion1.sds</td>
<td>Plate 1 Distortion Information</td>
</tr>
<tr>
<td>tdfconstantsDF.sds</td>
<td>Fibre status information.</td>
</tr>
</tbody>
</table>

tweak your fields at the telescope, since things can and do change on very short notice. This is especially true at the start of your run.

7.2.2 Starting the Software

Starting configure just requires running the appropriate executable, either from the terminal, or, if on Mac OS, by double clicking the executable in the Finder window. Remember that unless you have added it to your path, you will need to provide the full path to the executable.

```bash
laptop> cd configure-7.18-Linux
laptop> ./configure
```

Once launched, Configure asks you to select the instrument you wish to configure for (Figure 7.1; 2dF-HERMES, 2dF-AAOmega, 2dF, 2dF-old-404, FLAMES, 6dF).

![Configure instrument selection window.](image1.png)

Once the instrument has been selected the full configure interface will come up, including the main window, basic sequence window, and allocation display. To get started, follow the steps in the “Basic Sequence” window (Figure 7.2):

- Select the field plate to prepare the configuration for (plate 0, plate 1 or plate 2 which can be observed with either plate 0 or plate 1).
- Apply a magnitude filter (this is very rarely used).

![Configure basic sequence window.](image2.png)
7.2. RUNNING CONFIGURE

- Open the .fld file to be configured.

- Select the fibre combination to be configured (this is rarely changed from the default “All Fibres”).

Once these options are set and the .fld file opened, the “Allocate” button can be selected. This opens the “Allocation” window (illustrated in Figure 3) from which configuring parameters can be set. The default settings are fine for the majority of programs but more detail on the available parameters, including hidden Expert options, is given below.

“OK” initiates the configuration which can be followed in the main Configure window.

When configuration is complete the simulated 2dF window will illustrate the configured fibre positions.

At this stage it is a good idea to check the numbers and distributions of guide stars configured and also that the configuration is observable over a range of hour angles. This can be checked using Commands menu item “Check over Hour Angle” and checking over 4 hours. Those fibres that are flagged as having conflicts over this time should be reallocated or deallocated by clicking the relevant fibre in the simulated 2dF window and using the Commands menu to deallocate and/or reallocate the fibre.

Once the configuration is complete the binary file for input into the telescope should be saved, using “save as SDS file” from either the “Basic Sequence” window or the File menu. You are now ready to observe these targets.

7.2.3 Allocation Options

There are a number of options available within the Configure algorithm, selectable from the “Allocation” window, illustrated in Figure 7.3.

- **Annealing** This governs how quickly the annealing routine cools during the allocation process. The Standard setting is generally fine.

- **Weight close pairs: ThetaMin; ThetaMax** In some circumstances one may wish to give additional weight to closely packed targets, at the expense of overall target yield. These allow this to be setup, but beware of the odd effects it will have on your allocation. This option has not been extensively tested to date.

- **Cross beam switching** If the observation requires Cross Beam Switching (CBS) between pairs of fibres, then the user should first generate the paired target positions using the menu option Commands->Generate CBS pairs and then set the CrossBeamSwitching flag. This gives additional weight to targets which are successfully allocated pairs of fibres, at the expense of overall target yield.

- **Straighten fibres** This gives increased weight to allocations which have fewer fibre crossovers. While this will have some impact of target yield, the effect is small/undetectable for most source distributions and results in fields that typically require fewer fibre parks between configurations, hence reconfiguration is faster (by 10–20 minutes in some cases). Figure 13 of Miszalski, et al. (MNRAS, 2006, 371, 1537)\(^2\) shows the effects of this straightening. It can have adverse effects on target priorities and so the concerned user will need to experiment with this option to determine the optimal solution.

- **Collision Matrix** It is occasionally useful to save the matrix of fibre collisions which has been calculated for this field. This enables quick restarts of the software later on. This file can however be rather large.

Enforce sky quota  This option forces the allocation of the requested number of sky fibres. This can result in subtly lower target yields for some fields, although the effect is small/undetectable for most source distributions (accepting that the full sky quota is allocated to skies). Most datasets will be of little value with less than 15 sky fibres. 20-30 fibres is more typical for most projects.

Peripheral weighting for Fiducials  This gives enhanced weight to selection of stars towards the edge of the field, which is typically beneficial for acquisition, and prevents all of the fiducial stars being crowded into a small area of the plate, as can happen with the SAconfigure algorithm.

Weight fiducial target pairs  For CBS observations one may wish to allocate the fiducial fibres in pairs in order to guide in both positions of the beam switch. Setting this flag gives extra weight to paired fiducial allocation. Note: it is often more efficient in terms of fibre allocation for the user to allocate fiducials by hand but to ensure that half of the fibres (e.g.50, 150, 250 and 350) go to position A guide stars, while the other half (e.g.100, 200, 300 and 400) go to position B guide stars. There is no requirement that these stars be the same set in the A and B positions.

Number of background threads to use  The calculation of the fibre collision matrix is very CPU intensive. On a modern multi CPU machine Configure can hijack all of the available CPUs and run a number of background threads, this vastly reduces the allocation time. For a single CPU machine, there is nothing to gain here.

On-the-fly collision calculation  By default, the the collision matrix is calculated in full in advance of the annealing (this is the way Configure-v7.4 operated when SAconfigure was first introduced). An alternative is to calculate it on-the-fly. This ensures that a configuration is achieved as quickly as possible. This configuration will be HIGHLY sub-optimal. The longer the process is allowed to run, the greater the region of parameter space that is investigate and the the better configuration will be. In the limit of the annealing process, the two approaches will produce identically good configurations, and will take identically long to reach this point. There is therefore often little point in doing the calculations on-the-fly. In fact this option may allow inexperienced/inpatient users to produce sub-optimal configurations. It can however, be used in cases where a pretty good configuration is needed rapidly.

Note: the original Oxford configuration algorithm, which can be used instead of the annealing by running the configureTrad command, will be far quicker.

Number of Sky fibres  The indicated number of sky fibres will be assigned (but see the note above on enforcing the sky fibre quota).

7.2.4  Additional Expert allocation options

These options can only be accessed via the Expert user mode which one activates via the toggle setting in the Options menu. These settings are generally for support astronomers and expert users.

Fibre clearance, Button clearance and pivot angle  These options are mainly for the 2dF support staff. If you do not know what they are used for then you should not adjust them. Note that the 2dF robot has safe values HARD WIRED into the system and so a configuration which is outside these bounds will be flagged as INVALID at configuration time. These settings should only be used to restrict the values to tighter constraints for reasons that are beyond the scope of this web page.
Figure 7.3: Allocation options in Configure.
Random Seed and Percentage of allocations sampled If one needs to configure more quickly, e.g., if the field is pathologically complex (usually centrally condensed or with heavily clustered targets) and the complexity cannot be reduced by reducing the number of targets in the input FLD file, then it is possible to sparse sample the collision matrix and speed up the process. If you need to use this option, it should be discussed with your support astronomer. The principle is, for such configurations, that the slow speed is caused by the large number of rather similar configuration that are available (in essence many objects could be configured with many different fibres without changing the basic properties of the configuration). The sparse sampling reduces the number of available allocations for these heavily oversampled objects, but does not remove the object from the possible allocations. Note that at this time the effect of this sparse sampling on properties such as spatial clustering is unknown. In most cases a better construction of the .fld file, with serious thought given the the true requirements of the project, is more appropriate than using sparse sampling on a poorly defined input file. To use the sparse sampling, set the seed for the random number generator, and then set the percentage of allocations to sample. Using only 10% will result in a very quick configuration, but most likely a poor yield. Using 80% seems to give a significant improvement in speed, without an obvious detrimental effects on the yield. Note: this mode is still underdevelopment, and it's effects are poorly understood at this time.

7.3 Wavelength Optimising Fibre Placement

In order to achieve a wide field of view and good image quality over that entire field of view the 2dF prime focus corrector suffers from Chromatics Variation in Distortion (CVD; Section 2.2). This means that while the Atmospheric Distortion Corrector (ADC) accounts for the effect of the atmosphere on your target object’s white light apparent positions, the prime focus corrector moves your target on the field plate as a function of wavelength. The effects can be quite large, up to 2 arcsec in the worst case when considered over the full wavelength range accessible to 2dF and over the full 2 degree field. 2dF knows about CVD and so you must specify for what wavelength you want 2dF to put the fibres in the correct position. This must be the compromise which best suits your program goals (e.g. 400nm for Ca H+K and the Balmer lines, 860nm for Ca Triplet work, 600nm for low-resolution broad-band redshift measurements with the 570nm dichroic or 670nm for low-resolution broad-band redshift measurements with the 670nm dichroic).