

Procedure for Designing Special Plates

Objective

To provide detailed instructions for designing a plate, including a request for the name of the science program and special instructions for observers.

Procedure

This procedure defines a fast-track method for designing plates in areas where tiles have already been created.

1. First, fetch `plPlugMapT-<tileId>.par` files from:
<http://www.sdss.fnal.gov:8000/~sdssdp/target/chunkxxx.html> where `<tileId>` and `xxx` are provided by SDSS data processing staff at Fermilab, or other knowledgeable people.
2. Rename `tileId` in the file name and in the file itself to new `tileIds` assigned by Fermilab.
3. In each file header, add a line under `decCen` that reads `reddeningMed 0 0 0 0`
4. For each line that begins with `PLUGMAPOBJ`, replace all lines for which `holeType = OBJECT` and `objType` is not `SPECTROPHOTO_STD` or `REDDEN_STD` with your favorite object (591 or 592 total). Make sure that your objects plus the number of fibers with `objType = REDDEN_STD` is 600 total.

Note: If your objects are faint, one should add 16 sky fibers as follows:

Delete 16 science objects, then randomly select 16 fibers with `holeType = COHERENT_SKY`, `objType = NA` and change `holeType` to `OBJECT`, `objType = SKY`.

5. Rules For Specifying Objects:
 - A. All objects must be within 1.5 degrees of the plate center (which is listed at the top of the file). Just to be safe, use a limit of 1.49 degrees.
 - B. All objects must be no less than 55 arcsec from each other and from every other object in the file. (This is conservative as some objects don't need collision avoidance).
 - C. All objects must be at a radius of > 100 arcsec from the plate center. The position of the plate center is given by `raCen` and `decCen` in the `plPlugMapT` file.
 - D. Objects should be distributed more or less uniformly across the plate. This is required to make sure that the plate is pluggable.
 - 1) Object ID (`run`, `rerun`, `camcol`, `field`, `objId`). It is recommended that the latest version

of the sky be used to choose targets, but in practice any run/rerun that covers the area can be used.

- 2) holeType is always OBJECT
- 3) ra, dec
- 4) fiber magnitudes (u, g, r, i, z)
- 5) Likelihoods (can be 0)
- 6) objType is GALAXY or QSO (or whatever is appropriate).
- 7) xFocal, yFocal, spectroId, fiberId, and throughput all set to -999
- 8) For galaxies, primTarget is -2147483584 (integer version of 0x80000040). For other objects, see below.
- 9) secTarget is -2147483648 (integer version of 0x80000000) The information that the requestor must provide is:

The primTarget and secTarget flags are actually the same flags as used in normal target selection but with the highest bit set to 1 to indicate that this is a southern survey target (hence the negative number).

6. Format the lines to look like all of the other lines in the file. Case is important!
7. Once this is done, create a file called tiTileCenters-<tileId1>-<tileId2>.par. where tileId1 is the lowest tileId, and tileId2 is the highest tileId.

The contents are similar to any existing tiTileCenters-xxxx-yyyy.par file on the web site except:

- a) Edit the contents for your 4 tiles
- b) Add two lines at the top of the file as follows:

tilep_id	<xx> (Number is to be supplied by Fermilab)
version	csabai (Or whoever is the designer of the plate).

8. Provide documentation to the Head of Survey Coordination that includes:
 - a) the science program that this plate is drilled for;
 - b) recommended exposure times for the APO observers;
 - c) any special observing/plugging/drilling instructions.

Conclusion

This procedure might seem complicated, but it guarantees that plates will have the right assortment of light traps, guide stars, skies, and spectrophotometric standards. Creating lists of these objects from scratch is very difficult.

If you have questions contact Steve Kent, Dan Vanden Berk, Brian Yanny, or Jim Annis.