Slew-Dither Pattern Examples

Color Sequence

The function may be used without any slewing or dithering. For instance, it can be used for taking exposures at different filters on the same object while guiding. In this special case, the guide state will not change. Below is a sample pattern file for such a case:

```
#title=false ra=false dec=false exposureTime=true numExposures=true filter=true muRA=false muDec=false
epoch=false dRA=false dDec=false rotatorPA=false rotatorFrame=false xi=false eta=false comment=true
commandOption=false
#
   10.0  3  V  "3 exposures of 10sec at V"
   20.0  2  R  "2 exposures of 20sec at R"
   30.0  1  B  "1 exposure of 30sec at B"
```

Dithering

A common use of this function is to perform a dither pattern. Please remember that the TCS offset command is an absolute offset command in TPLANE mode and that the TCS will not automatically clear the offsets upon receiving a new science target. So you should consider using an offset of 0,0 as the last row with exposure time of 0 seconds to effectively clear the offsets in the TCS. Below is a sample pattern file for such a case. The title is set to false so the last science target name will be used and with numExposures set to false, the default value of 1 is used.

```
#title=false ra=false dec=false exposureTime=true numExposures=false filter=true muRA=false muDec=false
epoch=false dRA=false dDec=false rotatorPA=false rotatorFrame=false xi=true eta=true comment=true
commandOption=false
#
10.0 U      0.0  30.0 "first dither (0,30) - U"
10.0 B     30.0   0.0 "second dither (30,0) - B"
10.0 V      0.0 -30.0 "third dither (0,-30) - V"
10.0 R    -30.0   0.0 "fourth dither (-30,0) - R"
10.0 OPEN   0.0   0.0 "origin"
```

Slewing

Probably the most common use of this function is to perform a series of slews automatically. Most of the meta data parameters are relevant to this case where a science target XML packet has to be generated and sent to the TCS. The example below shows the a simple slew pattern including the title, RA/DEC, exposure time, number of exposures and the filter. Since all the exposure are with the V filter, this pattern file can be simplified by setting filter to false and therefore eliminating the column. The user has to make sure though that the filter is correctly set in the test image prior to the start of the pattern.

```
#title=true ra=true dec=true exposureTime=true numExposures=true filter=true muRA=false muDec=false
epoch=false dRA=false dDec=false rotatorPA=false rotatorFrame=false xi=false eta=false comment=false
commandOption=false
#
"Field5 " 00:15:00.00 +45:30:00.0 2 1 V
"Field6 " 00:26:00.00 +46:30:00.0 15 2 V
"Field7 " 00:37:00.00 +47:30:00.0 5 3 V
```

Slewing & Dithering

This is a combination of the previous two examples, allowing the user to issue slews and dithers using the same input file. This is accomplished by the commandOption parameter. An example pattern file is shown below. When the command option is Slew , there should be valid values for and even though these values will be ignored. The reverse is also true so when the command option is Dither , RA and DEC have to be present and valid even though they will be ignored.

```
#title=true ra=true dec=true exposureTime=true numExposures=true filter=true muRA=false muDec=false
epoch=false dRA=false dDec=false rotatorPA=false rotatorFrame=false xi=true eta=true comment=true
commandOption=true
#
"object 1" 00:15:00.00 +45:30:00.0  10.0  1 R  0  0 "Object 1, slew, no dither"       Slew
"object 1" 00:15:00.00 +46:30:00.0  10.0  1 R 30 30 "Object 1, dither 30,30"          Dither
"object 1" 00:15:00.00 +46:30:00.0  10.0  1 R 60 60 "Object 1, dither 60,60"          Dither
"object 1" 00:15:00.00 +46:30:00.0   0.0  1 R  0  0 "Object 1, dither 0,0 - clear"    Dither
"object 2" 00:37:00.00 +47:30:00.0   7.5  2 V  0  0 "Object 2, slew no dither"        Slew
"object 2" 00:37:00.00 +47:30:00.0   7.5  2 V 30 30 "Object 2, dither 30,30"          Dither
"object 2" 00:37:00.00 +47:30:00.0   7.5  2 V 60 60 "Object 2, dither 60,60"          Dither
"object 2" 00:37:00.00 +47:30:00.0   0.0  2 V  0  0 "Object 2, dither 0,0 - clear"    Dither
```