

LBA vex file hacks

⚠️ *This page is obsolete - under normal circumstances VEX file hacking is not required*

Common vex file corrections needed for LBA experiments & vex2config.pl

Note: this should cease to become an issue when LBA SCHED definitions are fixed and it's all done properly... 😞

Not all channels recorded

In experiments where ATNF stations record 512 Mbps data rate (e.g. 4x16 MHz IFs, dual polarization) Ceduna and Hobart (and Tid) generally record only half the channels.

Currently this is not reflected in the vex format schedule (.skd) file. However it is relatively easy to edit the .skd file so that the correlator input file produced by vex2config will have the correct information on the recorded data (DATASTREAM and BASELINE tables)

- In the \$MODE block, duplicate the line beginning `ref $FREQ`, rename the second frequency '`<keyword>:<qualifiers>`' for the stations which did not record all channels, e.g.:

```
*-----
---
$MODE;
*
def lba3cm-2p-1IF;
  ref $PROCEDURES = Mode_01;
  ref $FREQ = 8417.00MHz2x16MHz:Pa:At:Mp; * removed Ho:Cd from this line
  ref $FREQ = 8417.00MHz2x16MHzHoCd:Ho:Cd; * new line
  ref $IF = L0@4500MHzDPolNoTone:Pa:Ho;
  ref $IF = L0@7800MHzDPolNoTone:At:Mp;
  ref $IF = L0@7000MHzDPolNoTone:Cd;
  ref $BBC = 2BBCs:Pa:At:Mp:Ho:Cd;
  ref $TRACKS = S2.32x4-2:Pa:At:Mp:Ho:Cd;
  ref $HEAD_POS = S2Void:Pa:At:Mp:Ho:Cd;
  ref $ROLL = NoRoll:Pa:At:Mp:Ho:Cd;
  ref $PASS_ORDER = S2with1Groups:Pa:At:Mp:Ho:Cd;
  ref $PHASE_CAL_DETECT = NoDetect:Pa:At:Mp:Ho:Cd;
enddef;
*-----
---
```

- In the \$FREQ block, duplicate the 'def' block, replace the keyword in the second block with the new one specified in the \$MODE block above, and comment out the appropriate channels, e.g.:

```
*-----
---
$FREQ;
```

```

*
def 8417.00MHz2x16MHz;
* mode = 1      stations =Pa:At:Mp
  sample_rate = 32.000 Ms/sec; * (2bits/sample)
  chan_def = : 8409.00 MHz : U :16.000 MHz : &CH01 : &BBC01 : &NoCal;
*Rcp
  chan_def = : 8425.00 MHz : U :16.000 MHz : &CH02 : &BBC01 : &NoCal;
*Rcp
  chan_def = : 8409.00 MHz : U :16.000 MHz : &CH03 : &BBC02 : &NoCal;
*Rcp
  chan_def = : 8425.00 MHz : U :16.000 MHz : &CH04 : &BBC02 : &NoCal;
*Rcp
  chan_def = : 8441.00 MHz : U :16.000 MHz : &CH05 : &BBC03 : &NoCal;
*Rcp
  chan_def = : 8457.00 MHz : U :16.000 MHz : &CH06 : &BBC03 : &NoCal;
*Rcp
  chan_def = : 8441.00 MHz : U :16.000 MHz : &CH07 : &BBC04 : &NoCal;
*Rcp
  chan_def = : 8457.00 MHz : U :16.000 MHz : &CH08 : &BBC04 : &NoCal;
*Rcp
enddef;
*
def 8417.00MHz2x16MHzHoCd; * new def with channels 5-8 commented out
* mode = 1      stations =Ho:Cd
  sample_rate = 32.000 Ms/sec; * (2bits/sample)
  chan_def = : 8409.00 MHz : U :16.000 MHz : &CH01 : &BBC01 : &NoCal;
*Rcp
  chan_def = : 8425.00 MHz : U :16.000 MHz : &CH02 : &BBC01 : &NoCal;
*Rcp
  chan_def = : 8409.00 MHz : U :16.000 MHz : &CH03 : &BBC02 : &NoCal;
*Rcp
  chan_def = : 8425.00 MHz : U :16.000 MHz : &CH04 : &BBC02 : &NoCal;
*Rcp
  chan_def = : 8441.00 MHz : U :16.000 MHz : &CH05 : &BBC03 : &NoCal;
*Rcp
  chan_def = : 8457.00 MHz : U :16.000 MHz : &CH06 : &BBC03 : &NoCal;
*Rcp
  chan_def = : 8441.00 MHz : U :16.000 MHz : &CH07 : &BBC04 : &NoCal;
*Rcp
  chan_def = : 8457.00 MHz : U :16.000 MHz : &CH08 : &BBC04 : &NoCal;
*Rcp
enddef;
*-----
---
```

Swapped polarizations

If a station swapped polarizations in a dual-pol experiment, the \$IF section of the vex file can be edited to make the correlator input file produced by `vex2config.pl` correct.

In the \$MODE block, if necessary create a new 'ref', e.g. for v275a where both Hobart and Tid swapped pols, the original block:

```
$MODE;
*
def lbalcm-2p-2IF;
    ref $PROCEDURES = Mode_01;
    ref $FREQ = 22300.00MHz2x16MHz:At:Mp:Pa:Ho:Cd:Ti;
    ref $IF = L0@19000MHzDPolNoTone:At:Mp:Pa:Ho;
    ref $IF = L0@20000MHzDPolNoTone:Cd;
    ref $IF = L0@21914MHzDPolNoTone:Ti;
    ref $BBC = 2BBCs:At:Mp:Pa:Ho:Cd:Ti;
    ref $TRACKS = S2.32x4-2:At:Mp:Pa:Ho:Cd:Ti;
    ref $HEAD_POS = S2Void:At:Mp:Pa:Ho:Cd:Ti;
    ref $ROLL = NoRoll:At:Mp:Pa:Ho:Cd:Ti;
    ref $PASS_ORDER = S2with1Groups:At:Mp:Pa:Ho:Cd:Ti;
    ref $PHASE_CAL_DETECT = NoDetect:At:Mp:Pa:Ho:Cd:Ti;
enddef;
```

becomes:

```
$MODE;
*
def lbalcm-2p-2IF;
    ref $PROCEDURES = Mode_01;
    ref $FREQ = 22300.00MHz2x16MHz:At:Mp:Pa;
    ref $FREQ = 22300.00MHz2x16MHzDAS1:Ho:Cd:Ti; * (Also had to edit FREQ
block as Ho, Cd, Ti record only half the channels)
    ref $IF = L0@19000MHzDPolNoTone:At:Mp:Pa; * Ho removed from this
line
    ref $IF = L0@19000MHzDPolNoToneHo:Ho; * new line for Hobart
    ref $IF = L0@20000MHzDPolNoTone:Cd;
    ref $IF = L0@21914MHzDPolNoTone:Ti; * not needed for Tid
since it has its own IF def
    ref $BBC = 2BBCs:At:Mp:Pa:Ho:Cd:Ti;
    ref $TRACKS = S2.32x4-2:At:Mp:Pa:Ho:Cd:Ti;
    ref $HEAD_POS = S2Void:At:Mp:Pa:Ho:Cd:Ti;
    ref $ROLL = NoRoll:At:Mp:Pa:Ho:Cd:Ti;
    ref $PASS_ORDER = S2with1Groups:At:Mp:Pa:Ho:Cd:Ti;
    ref $PHASE_CAL_DETECT = NoDetect:At:Mp:Pa:Ho:Cd:Ti;
enddef;
```

The original \$IF block:

```
$IF;
*
def L0@19000MHzDPolNoTone;
* mode = 1    stations =At:Mp:Pa:Ho
    if_def = &IF_2N : 2N : R : 19000.0 MHz : U ; * PCall off!
    if_def = &IF_1N : 1N : L : 19000.0 MHz : U ; * PCall off!
enddef;
```

```
*
def L0@20000MHzDPolNoTone;
* mode = 1    stations =Cd
    if_def = &IF_2N : 2N : R : 20000.0 MHz : U ; * PCall off!
    if_def = &IF_1N : 1N : L : 20000.0 MHz : U ; * PCall off!
enddef;
*
def L0@21914MHzDPolNoTone;
* mode = 1    stations =Ti
    if_def = &IF_2N : 2N : R : 21914.0 MHz : U ; * PCall off!
    if_def = &IF_1N : 1N : L : 21914.0 MHz : U ; * PCall off!
enddef;
```

becomes:

```
$IF;
*
def L0@19000MHzDPolNoTone;
* mode = 1    stations =At:Mp:Pa
    if_def = &IF_2N : 2N : R : 19000.0 MHz : U ; * PCall off!
    if_def = &IF_1N : 1N : L : 19000.0 MHz : U ; * PCall off!
enddef;
*
def L0@19000MHzDPolNoToneHo;    * new entry for Hobart with pols swapped
* mode = 1    stations =Ho
    if_def = &IF_2N : 2N : L : 19000.0 MHz : U ; * PCall off!
    if_def = &IF_1N : 1N : R : 19000.0 MHz : U ; * PCall off!
enddef;
*
def L0@20000MHzDPolNoTone;
* mode = 1    stations =Cd
    if_def = &IF_2N : 2N : R : 20000.0 MHz : U ; * PCall off!
    if_def = &IF_1N : 1N : L : 20000.0 MHz : U ; * PCall off!
enddef;
*
def L0@21914MHzDPolNoTone;    * swapped pols in Tid's IF def
* mode = 1    stations =Ti
    if_def = &IF_2N : 2N : L : 21914.0 MHz : U ; * PCall off!
    if_def = &IF_1N : 1N : R : 21914.0 MHz : U ; * PCall off!
enddef;
```

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