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Online Histogram Monitoring Documentation

General information

There are two programs to create online histograms, the first one: `sampler` is called by the DAQ to create the plots online. The second one `doOfflineHistoDrs4` can be called from the command line to recreate the histograms, or to create them for the pedestal events.

Both programs should be executed on `pcdreamdaq2` for this reason there is a script in called `doOfflineHisto` that will ssh to `pcdreamdaq2` set the correct environment variables and call the program from there.

The source file for `sampler` is `sampler.c`; the source file for `doOfflineHistoDrs4` is `doOfflineHisto.c`; both programs rely on `dreammon.c`. `dreammon.c` has 3 functions:

```
int dreammon_init(char * * argv, unsigned int run_nr, bool drs, int drs_setup, bool phys_h);

int dreammon_event(unsigned int doSingle, unsigned int events, unsigned int * buf, bool drs, int drs_setup);

int dreammon_sync(unsigned int i, bool drs, int drs_setup);

int dreammon_exit(unsigned int i, bool drs, int drs_setup);
```

The `dreammon_init()` initializes the monitoring histogram, `dreammon_event()` is called for every event and fills the histos, `dreammon_sync()` saves the histo to a file and is called about every 1000 events. `dreammon_exit()` is called in the end to free some memory.

Most of the parameters passed to the functions are obsolete and are ignored by the functions 😊

In some cases the code to create the histograms for a specific class of devices has been moved to its own separate file. For instance `dreammon_adc.h` contains everything about the ADCs and `dreammon.c` calls the `adc_init()` `adc_event()` and `adc_sync()` functions. `dreammon_adc.h` should be splitted in `dreammon_adc.c` and `dreammon_adc.h` but I haven't had the time yet.

Someone, maybe you, should also take the time to move the TDC, OSC and DRS specific parts of `dreammon.c` and move them to their separate files.

Environment variables

Input binary files are searched in:

```
$DATADIR/data $DATADIR/pedestal
```

Input root files for pedestal subtraction are searched in:

```
$NTUPLEDIR/
```

Output files will be placed in:

```
$NTUPLEDIR/
```

How to change the ADC mapping

change the mapping.h file. For newdream channel: set the tower fiber and amp values by modifying or adding a case to the switch statement and the code will generate the channel name. For Leakage, crystals and ancillary detectors you just need to set the name or the channel number. Once you do this everything should be saved in the correct folder of the monitoring file. If it does not work look at the `adc_sync()` function in `dreammon_adc.c`.

-- MicheleCascella - 15-Jul-2012

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