How To Set Up and Use The Tritium Replay Code

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Chapter 1

Introduction

The official replay code for the tritium family of experiments lives in GitHub. This decision was made to allow better version control in a large collaboration. The main repository will have everything set up for working on the *aonl* machines. This document will walk you through setting up your fork of this repository to work in your personal workspace.

This document assumes that you already have ROOT 6 and the Hall A Analyzer version 1.6 installed in your personal workspace.

Chapter 2

Setting Up The Code

2.1 Set Up Environmental Variables

There are four environmental variables that need to be set in order for the replay to work on your machine. When working on the *aonl* machines, can omit the all but *DB_DIR*.

1. ANALYZER - Set to the directory where the analyzer lives. Can omit on *aonl* machines.
2. PATH - Add the directory where the analyzer lives. Can omit on *aonl* machines.
3. LD_LIBRARY_PATH - Add the directory where the analyzer lives. Can omit on *aonl* machines.
4. DB_DIR - Set to the directory of the replay database.

If you are using the official replay, a script is provided to do this for you. In the replay directory, run:

```
source sourceme.sh
```

This script can serve as an example for setting up your own installation as well. If you are using `csh` instead of `bash` be sure to replace `export` with `setenv` and `=` with a space.

2.2 Directory Structure

The code has been set up so that the number of lines that need to be changed to reflect your directory structure can be kept to a minimum.

In rootlogon.C:

1. Set *char* replay_dir_prefix* to the directory where your code lives. There must be a trailing */%s*. In most setups, leaving it as *./%s* should suffice.

In def_tritium.h:

3. Set *char* REPLAY_DIR_PREFIX* to the directory where your code lives. There must be a trailing */%s*. In most setups, leaving it as *./%s* should suffice.

4. Set *char* ROOTFILE_DIR_PREFIX* to the directory where your root files will be stored. There must be a trailing */%s*.

5. Add the location of your raw data folder to the *static const char* PATHS[]* array if you do not have access to the standard directories.

Now you must compile the ReplayCore. To do this, type the following commands into a terminal in the replay directory.

```
analyzer
.L ReplayCore64.C+
.q
```

2.3 Compiling The Libraries

To compile all of the libraries, a script has been provided. Go into the *replay/libraries/* directory. From there, run the command:

```
./libs.sh
```

Chapter 3

Running The Replay Code

To run the replay code, navigate to the replay directory. Once there, type:

```
analyzer replay_tritium.C
```

The analyzer will then prompt you for a run number, followed by the number of events to replay. The output root file will be stored wherever you defined *char* ROOTFILE_DIR_PREFIX* in def_tritium.h. In the official replay installation, this location is */chafs1/work1/tritium/Rootfiles/*.

To load the contents of the root file into an analyzer session:

```
analyzer [path_to_root_file]
```

To view the online plots:

```
onlineTritium [run_number]
```