

An Examine Package for the DØ Run IIB Level 1 Calorimeter Trigger

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Abstract

We describe `l1cal_examine_2b`, a DØ framework package that plots the outputs of the DØ Run IIB Level 1 Calorimeter Trigger.

1 Introduction

The `l1cal_examine_2b` package is a DØ framework package that plots the outputs of the DØ Run IIB Level 1 Calorimeter Trigger. It is based on the Run IIA package `l1cal_examine`, originally written by Bob Kehoe and Chris Tully. Todd Adams's `L1Cal2b` unpacking code is used to unpack the `L1Cal2b` data from the `RawDataChunk`. Steven Beale is the current developer of the Examine.

2 Status of the Examine

Work began on the Examine itself mid-August, 2005, once Chris Tully provided a version of the Run IIA `l1cal_examine` that compiled and ran offline under `p17.05.01`. The Examine code utilizes accessors provided by the `L1Cal2b` unpacker to get the trigger tower data to fill the plots. This interface is independent of the data format.

The L1Cal2b unpacker, developed and maintained by Todd Adams, has been used to unpack both Monte Carlo trigger tower data produced by the L1Cal2b simulation, `tsim_l1cal2b`, and data output from the L1Cal2b test stand hardware. As reading and verifying the test stand data has been a higher priority, the unpacker code has been modified to handle the varying data formats delivered from the test stand. A consequence is that the unpacker no longer reads the `tsim_l1cal2b` output data format, which is the L1Cal2b design data format. Ultimately, the simulation will be modified to agree with the final hardware data format. In the short term, however, there is no unpacker that can be integrated into the Examine for reading the design (`tsim_l1cal2b`) data format.¹

The first task is to get a version of the unpacker that reads the existing `tsim_l1cal2b` data format so that we can test the code using Monte Carlo data processed by `tsim_l1cal2b`. Then that unpacker will be integrated into the Examine code copied from the existing `l1cal_examine` package. When the Examine is able to utilize the unpacker accessors to get the trigger tower data, the plots already provided for the Run IIA data should be filled.

The code to read out the trigger terms from the L1Cal2b data must be implemented in the unpacker so that the appropriate accessors can be called from the Examine. New plots taking advantage of the more sophisticated data provided by L1Cal2b can then be added.

Some raw test stand data files are available and the existing unpacker is able to read them so it should be straightforward to create two Examine executables, one for the Monte Carlo simulated data and one for the test stand data.

Before a fully-functional Examine is available, some development to the unpacker will be required. The Examine project itself is expected to proceed quickly as not a lot of new code is required.

¹In the long run, an IOgen-based unpacker would be desirable, though not necessary, for running in D0TrigSim, but no one has been assigned to this project.