Missing FEMBs and
the dataprep tool interface

ProtoDUNE sim/reco

David Adams

BNL

June 5, 2019

Introduction

Concern raised recently about missing FEMBs in protoDUNE data

- Concern I have shared for a while
- We should do a better job of monitoring (and fixing) this
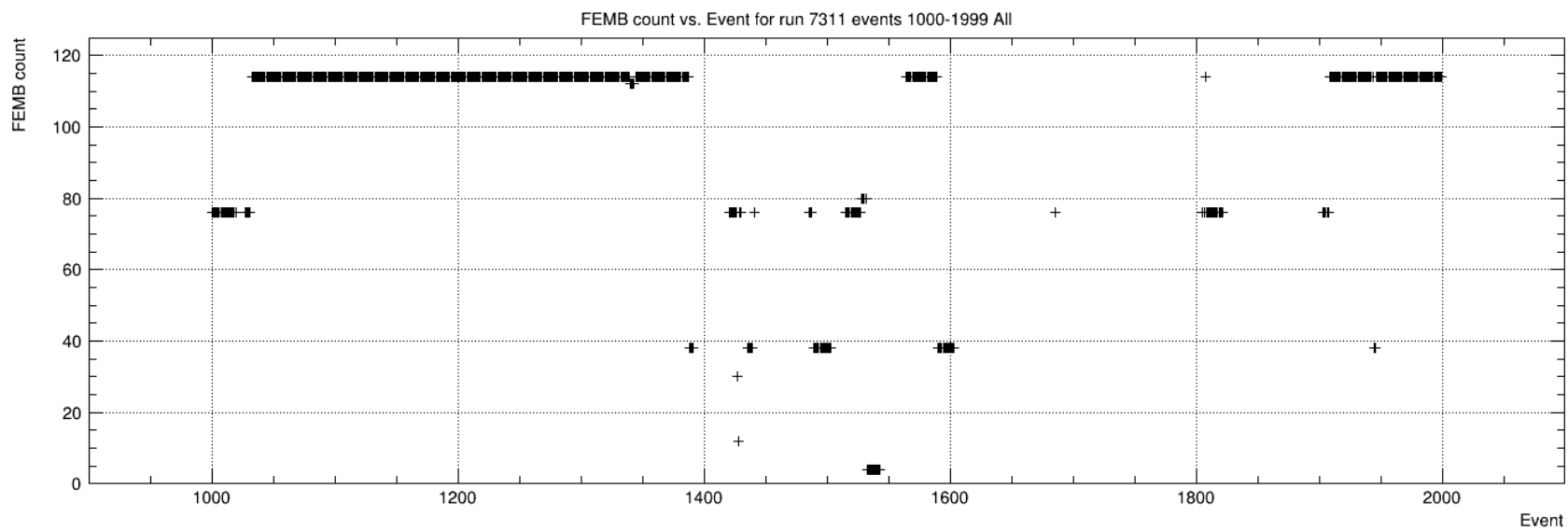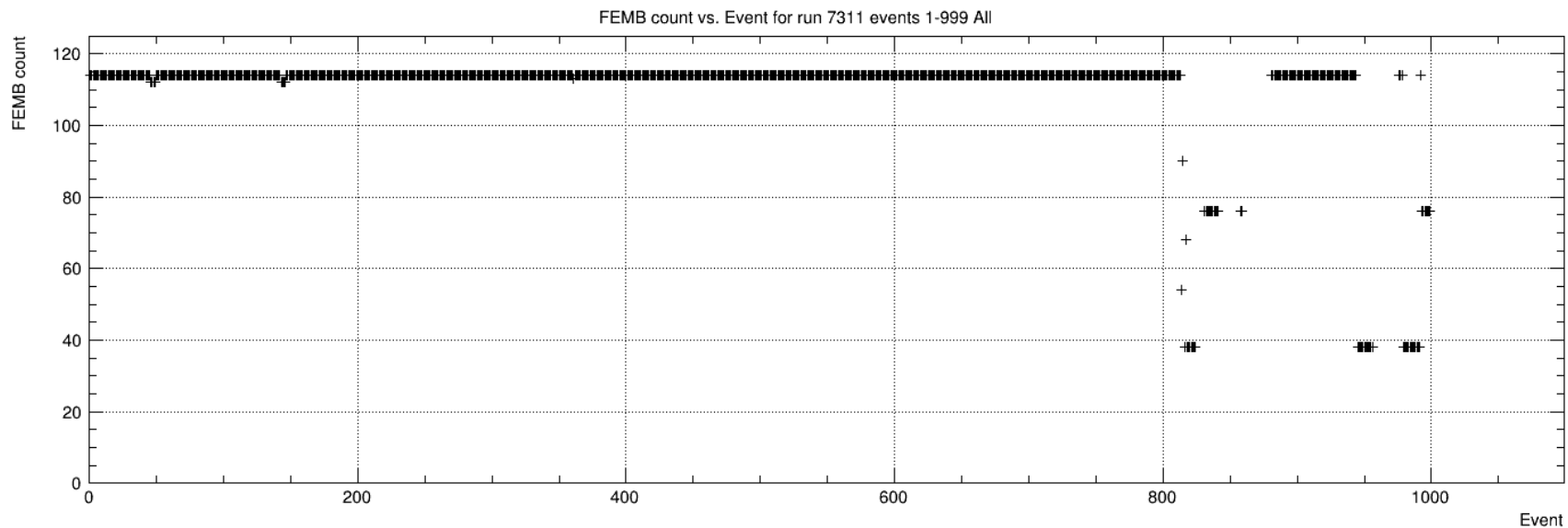
Natural for this to be part of DQM

- We have dataprep tool to monitor FEMB counts
  - See following
- Need more than single events to find know the extent of problems
- Nice to have DQM that processes a slice of a run
  - Slice = contiguous subset of event numbers in a run
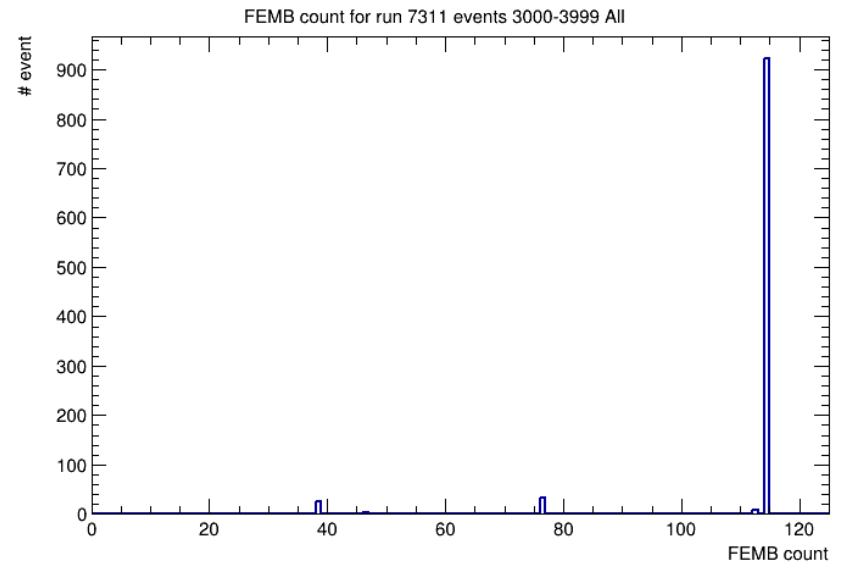 - Full run is too long
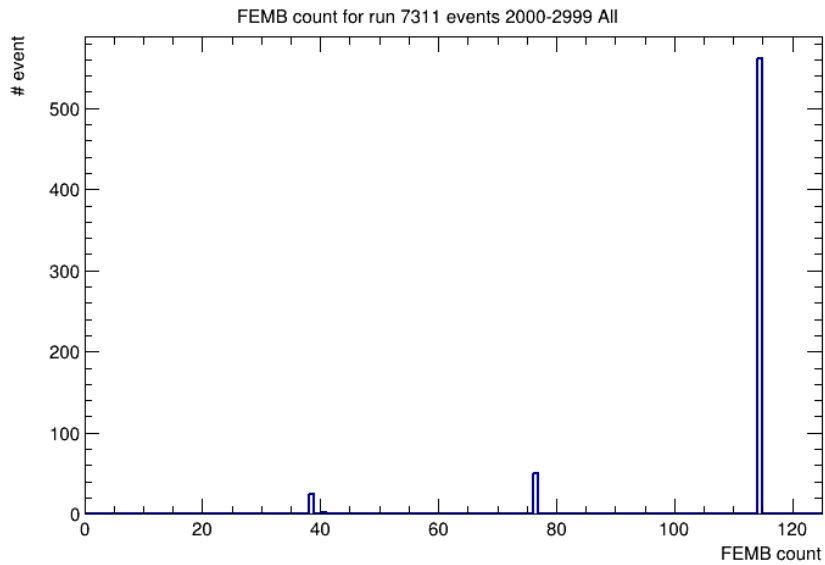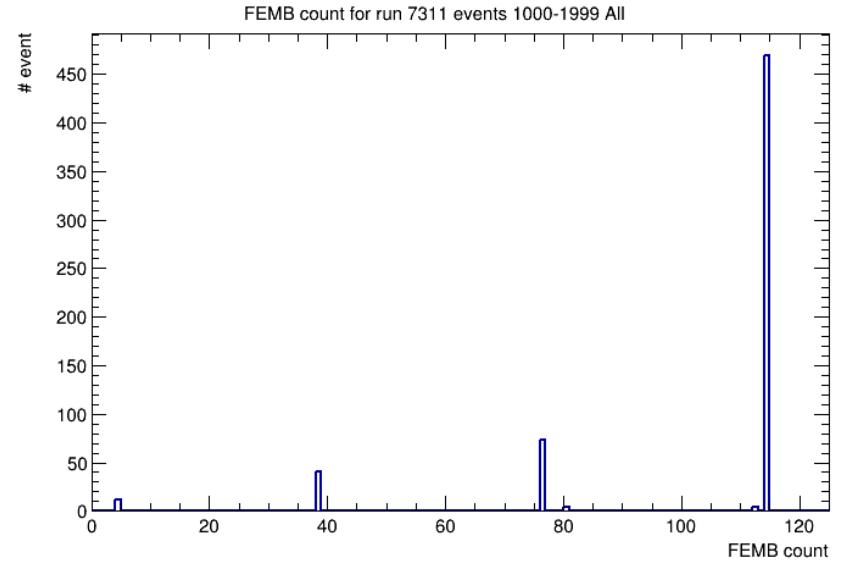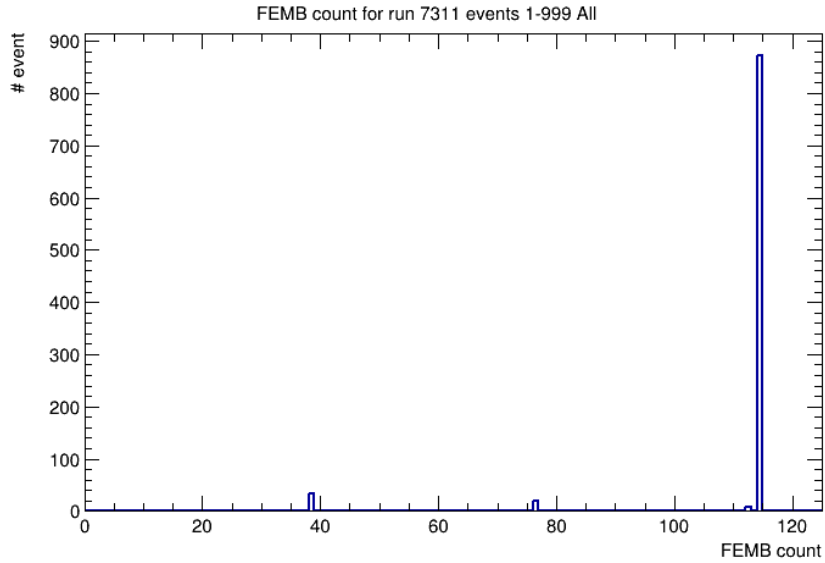
Current tool

An existing tool is AdcEventViewer

- Following show plots from pd_evtviewNfemb
  - # FEMBs vs event number
  - Histogram of event counts
  - Filled for slices of 1000 events
    - I have script to find all files in a run holding any in a range of event numbers
    - And dunetpc has a tool to only process events in a range
- More plots at

  http://internal.dunescience.org/people/dladams/protodune/data/dqm2
  - Happy to add any runs of interest
  - Plots being updated as code is refined

Example plots (1)

FEMB count vs. Event for run 7311 events 1-999 All

FEMB count vs. Event for run 7311 events 1000-1999 All

Example plots (2)

Comments

Example plots have issues

- Many missing FEMBs
- Apparent missing events

This run (7311) is not typical

- But happened to be the first I examined
- Other runs also have issues

Missing events are not actually missing

- Just have no channels and so dataprep tools don't see them
- Dataprep tool interface is being extended to fix this
  - Add beginEvent and endEvent methods so we can know when an empty event has been processed
  - Hope to have this for next release