

# Chapter 1

## BigBite DAQ and Trigger Diagrams

### 1.1 Electron DAQ and Trigger Diagrams

This section contains a record of transversity and d2 trigger diagrams (i.e. the diagrams for the BigBite electron detection package), these include:

1. A block diagram for the HRS-BigBite coincidence trigger.
2. A diagram of the BigBite Shower & PreShower trigger logic.
3. A diagram of the BigBite Cherenkov trigger logic.
4. A diagram of the BigBite timing.
5. A block diagram of the DAQ setup in the BigBite electronics platform.

These circuits will be used with the BigBite electron detector package. The BigBite hadron detector package and neutron detector for the (e,e'd) experiment will use separate circuits.

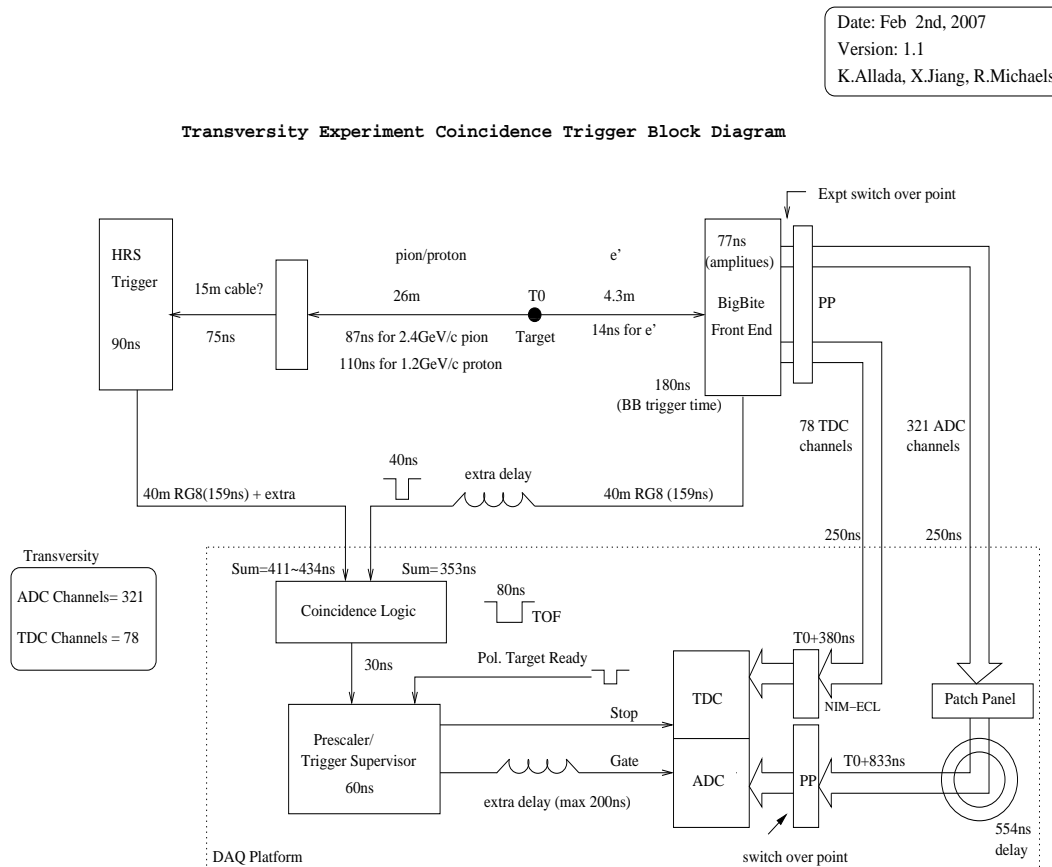


Figure 1.1: A block diagram for the HRS-BigBite coincidence trigger. Patch panels (PP) are the places where detector cables are disconnected when switching over between different experiments.

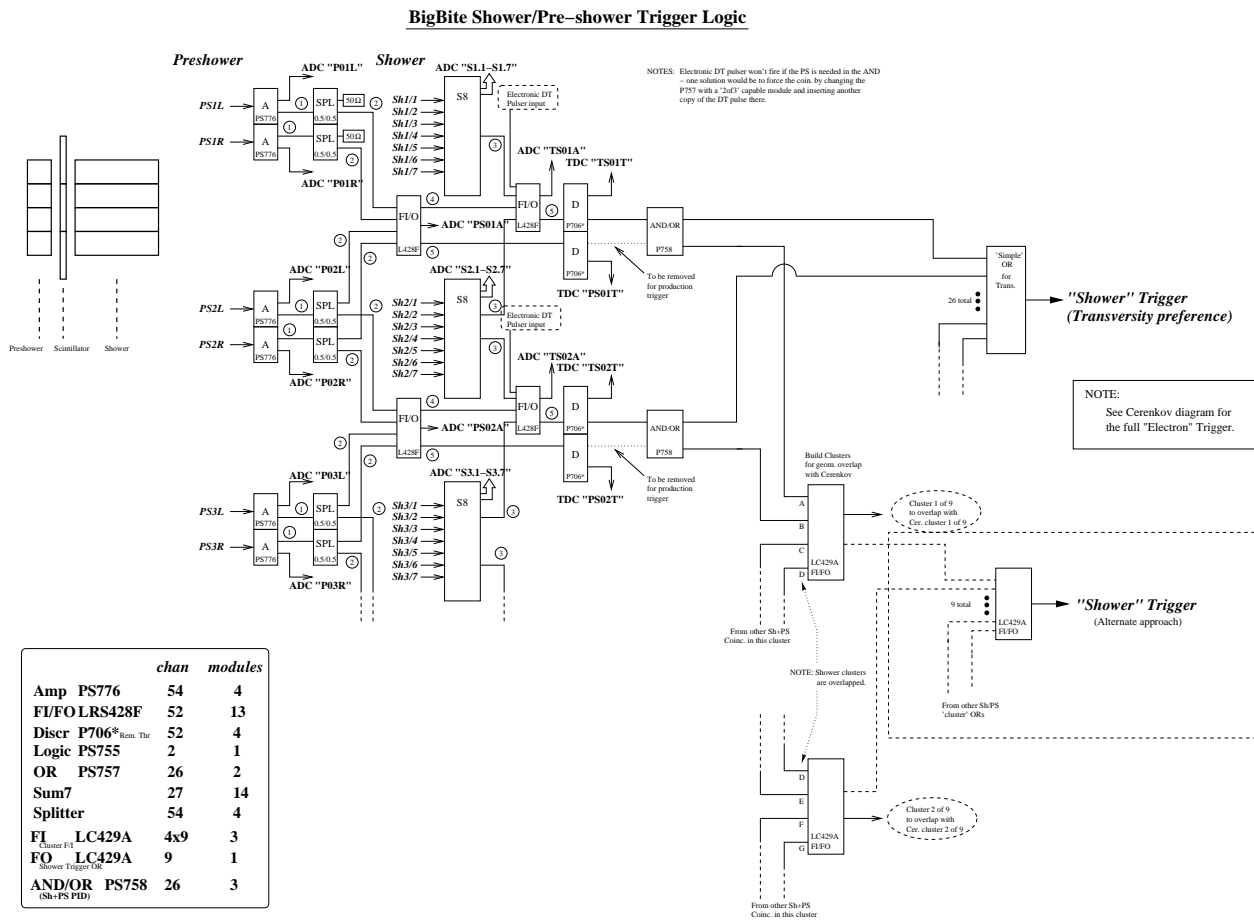


Figure 1.2: A diagram of the BigBite Shower and Preshower trigger logic, almost identical to that of the  $G_E^n$  experiment. The Cherenkov logic is shown in Fig. 1.3.

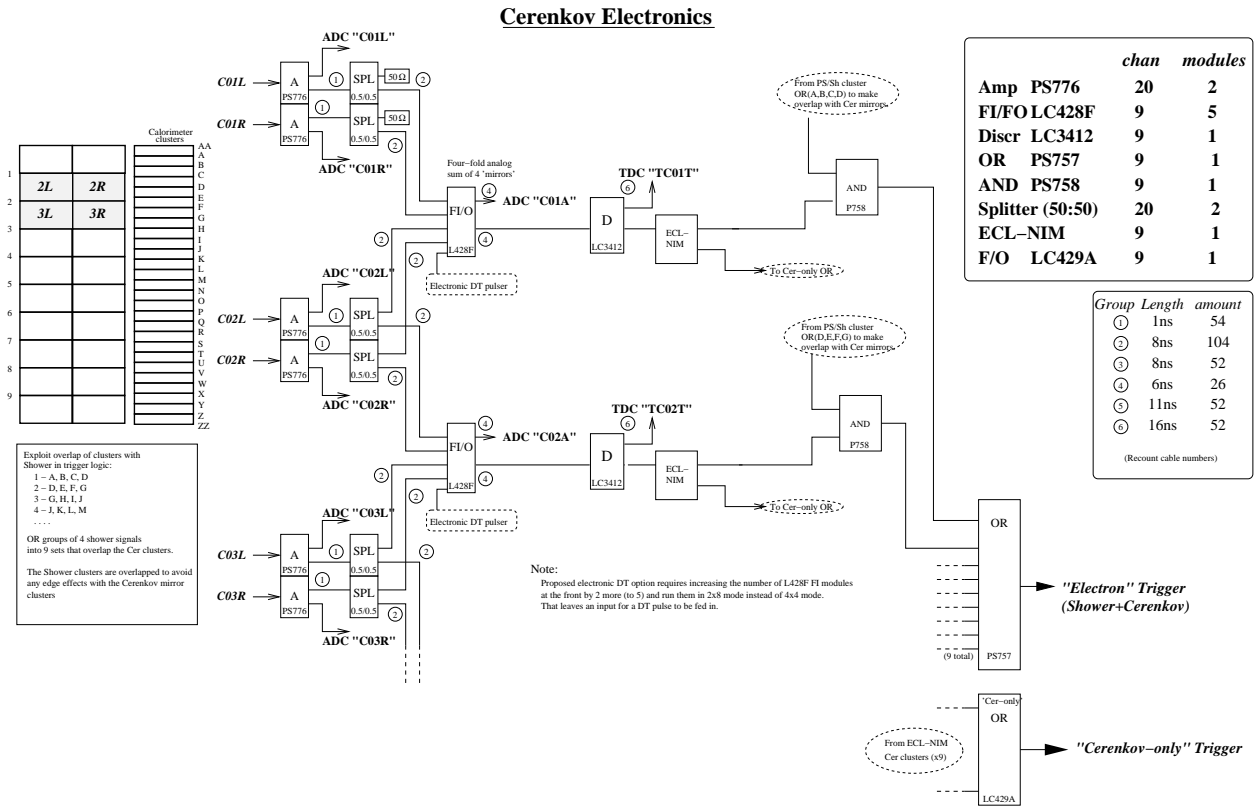


Figure 1.3: A diagram of the BigBite Cerenkov trigger logic. This follows a pattern very similar to the Shower trigger.

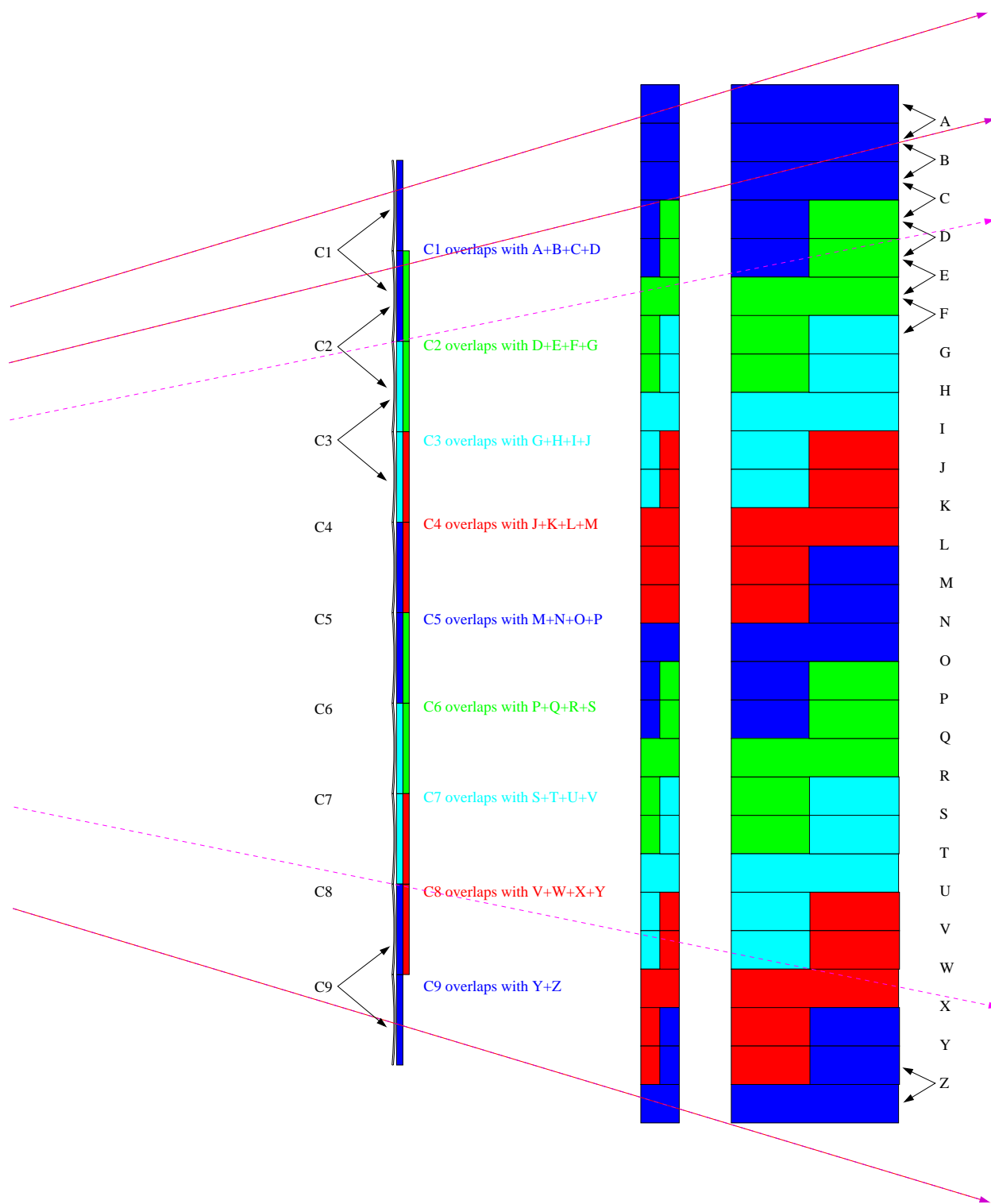


Figure 1.4: Geometric overlaps between the Cerenkov clusters (4 mirrors) and the Shower & PreShower clusters (5 rows) as implemented in the Cerenkov+Shower trigger.

### BB Scintillator plane (2x27 ch)

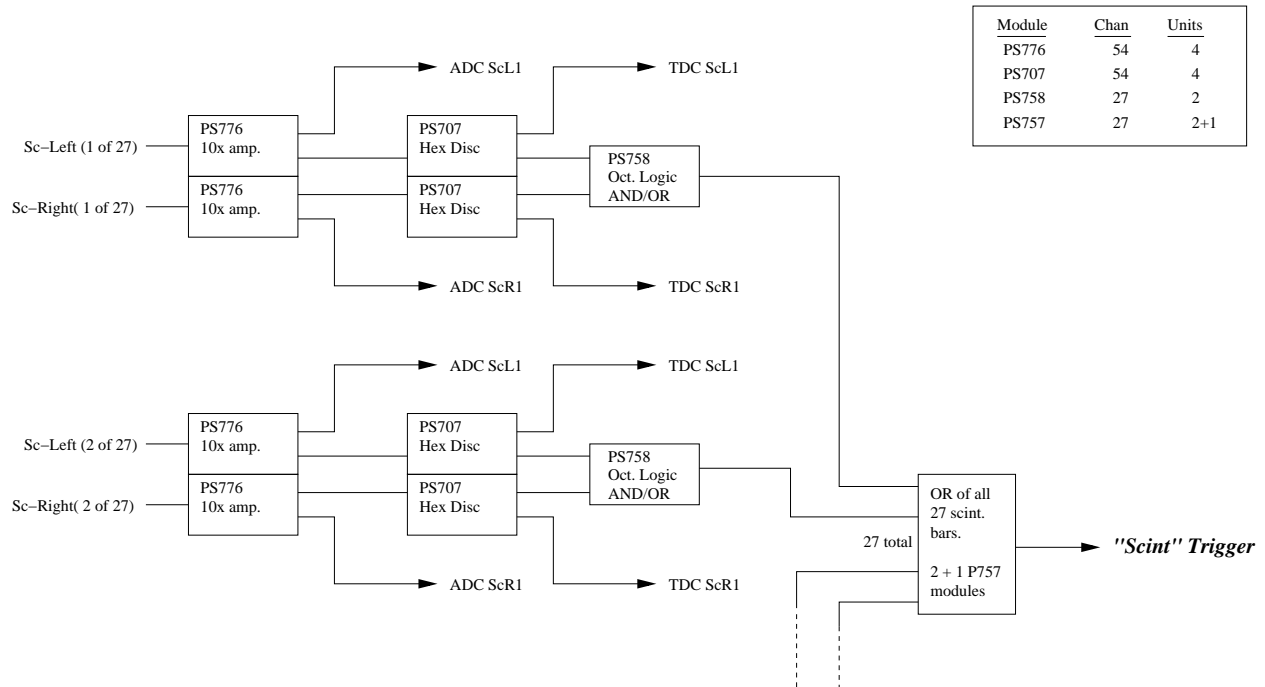


Figure 1.5: The timing scintillator flow diagram.

### BigBite

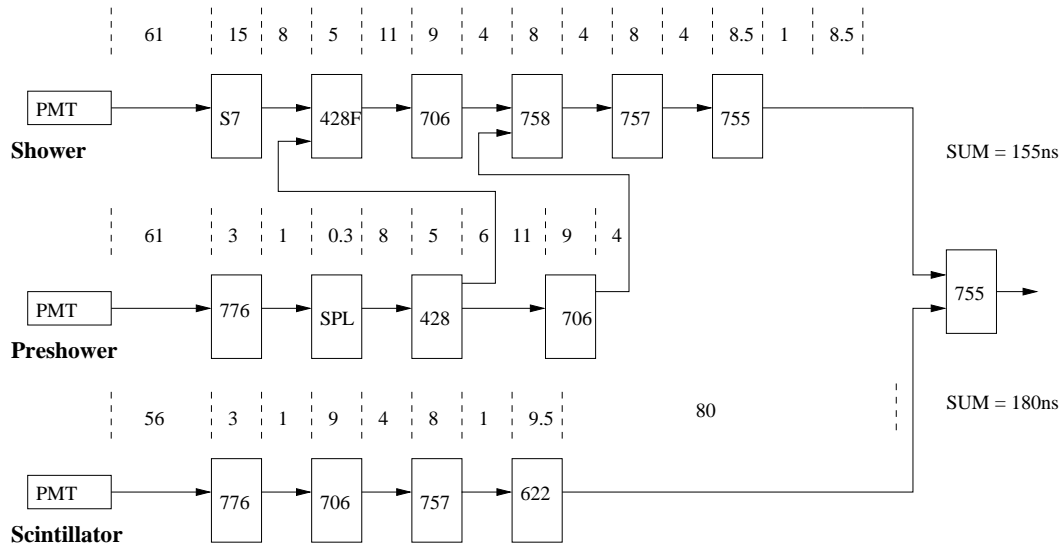


Figure 1.6: A diagram of the BigBite timing.



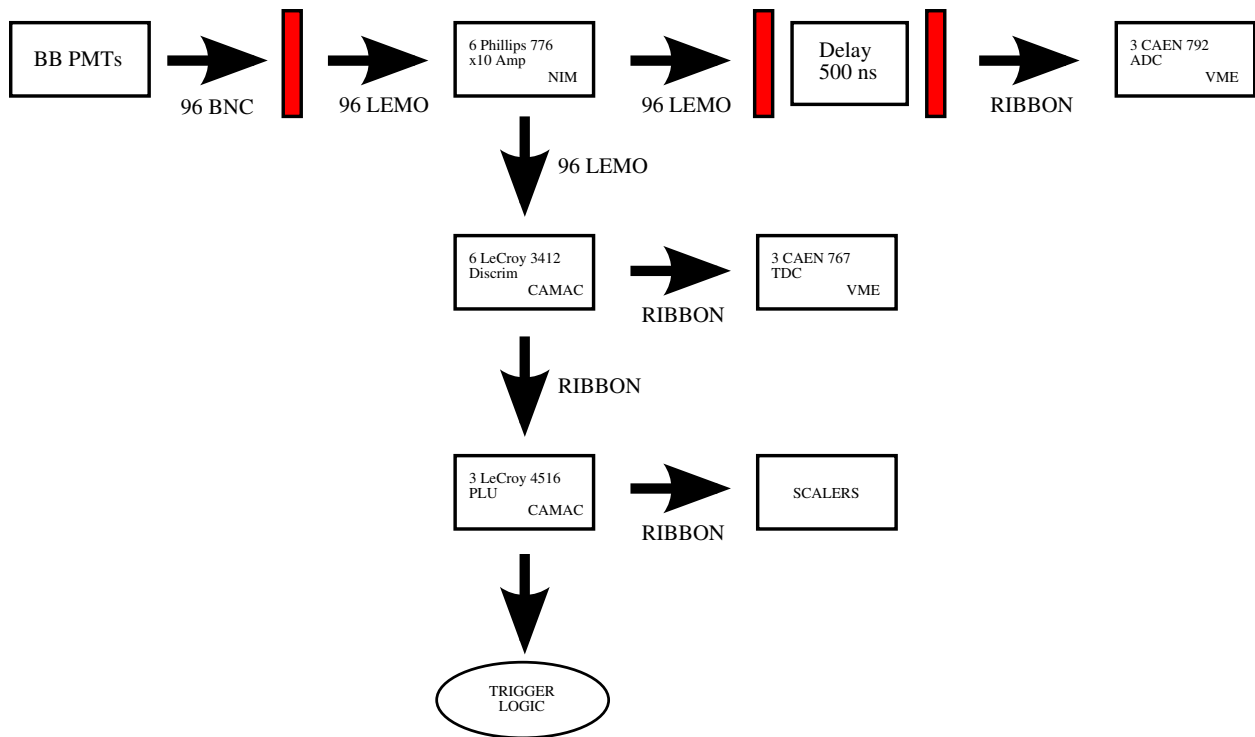


Figure 1.8: The flow diagram for the Hadron detector electronics. This scheme is the same as was used for the BigBite Short-Range Correlations experiment.

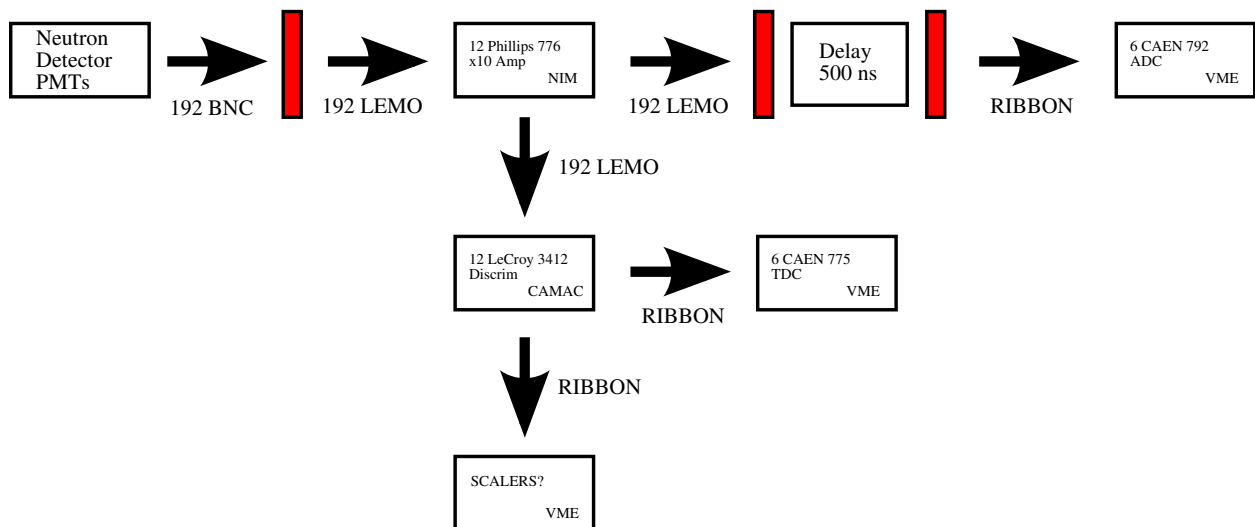


Figure 1.9: The flow diagram for the neutron detector electronics. This scheme is the same as was used for the BigBite Short-Range Correlations experiment.

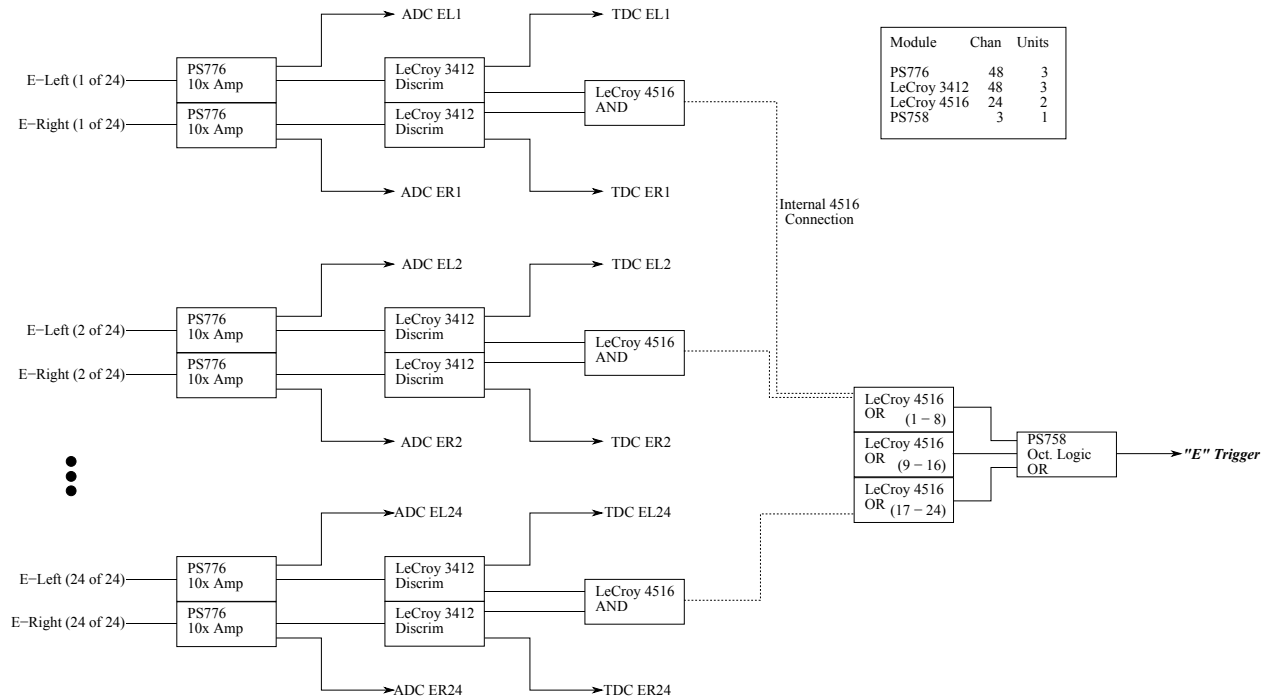


Figure 1.10: The trigger for the Hadron package. This trigger will be used in coincidence with the left HRS during the threshold pion experiment and as a single arm sampling trigger during the (e,e'd) experiment.