CRU DATA FORMAT

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INTRODUCTION

This presentation describes the data format coming out from the CRU.

Currently there are 3 main cases:
- RAW DATA TAKING (AKA continuous)
- PACKET DATA TAKING (AKA packet)
- RAW DATA TAKING in TRIGGER MODE (AKA TPC/MCH trigger mode)

The presentation will describe the data format for the 3 cases.
A BIT OF HISTORY (PACKET DETECTOR)

HB#0 | HB#1 | HB#2
---|---|---
RDH HB 0 OPEN | RDH HB 1 OPEN | RDH PHY TRG
RDH HB 0 CLOSE | RDH PHY TRG | PAYLOAD DATA (8 KB)
PAYLOAD DATA (2 KB) | PHY TRG DATA | RDH HB 1 CLOSE
DMA BLOCK 0 | DMA BLOCK 1 | PHY TRG DATA = 10 KB

HB TRIGGER
PHY TRIGGER
CURRENT IMPLEMENTATION (_PACKET DETECTOR_)

HB FRAME 0 | HB FRAME 1

HB#0 | HB#1 | HB#2

RDH HB 0 OPEN
RDH HB 0 CLOSE
RDH HB 1 OPEN
PHY TRG INFO (128 bit)
PAYLOAD DATA (8 KB – 128 bit)
RDH HB 1
PAYLOAD DATA (2 KB + 128 bit)
RDH HB 1 CLOSE

PHY TRG DATA = 10 KB

HB TRIGGER
PHY TRIGGER
CURRENT IMPLEMENTATION (CONTINUOUS DETECTOR)

HB FRAME 0

HB#0

RDH HB 0 OPEN
PAYLOAD DATA (8 KB)
RDH HB 0
PAYLOAD DATA (8 KB)
RDH HB 0
PAYLOAD DATA (< 8 KB)
RDH HB 0 CLOSE
RDH HB 1 OPEN
PAYLOAD DATA (8 KB)

HB FRAME #0

HB#1

HB FRAME 1

HB#2

HB TRIGGER
PHY TRIGGER
SAME DATA FORMAT

HB FRAME #0

RDH HB 0 OPEN
PAYLOAD DATA
RDH HB 0
PAYLOAD DATA
RDH HB 0
PAYLOAD DATA
RDH HB 0 CLOSE
PAYLOAD DATA
RDH HB 1 OPEN
PAYLOAD DATA

HB FRAME #1

RDH HB 0 OPEN
RDH HB 0 CLOSE
RDH HB 1 OPEN
PHY TRG INFO
PAYLOAD DATA
RDH HB 1
PAYLOAD DATA
RDH HB 1 CLOSE
CURRENT IMPLEMENTATION (CONTINUOUS DETECTOR IN TRG MODE)

HB FRAME 0 | HB FRAME 1
---|---

HB#0 | HB#1 | HB#2
---|---|---
RDH HB 0 OPEN | RDH HB 0 CLOSE | RDH HB 1 OPEN
RDH PHY TRG | RDH PHY TRG | RDH HB 1 CLOSE
PAYLOAD DATA (8 KB) | PAYLOAD DATA (2 KB) |

PHY TRG DATA = 10 KB
PROPOSAL (CONTINUOUS DETECTOR IN TRG MODE)

HB FRAME 0 | HB FRAME 1

HB#0 | HB#1 | HB#2

- RDH HB 0 OPEN
- RDH HB 0 CLOSE
- RDH HB 1 OPEN
- PHY TRG INFO (128 bit)
- PAYLOAD DATA (8 KB - 128 bit)
- RDH HB 1
- PAYLOAD DATA (2 KB + 128 bit)
- RDH HB 1 CLOSE

PHY FRAME #0

PHY FRAME #1

DMA BLOCK 0

DMA BLOCK 1

PHY TRG DATA = 10 KB

HB TRIGGER

PHY TRIGGER
PROPOSAL (CONTINUOUS DETECTOR IN TRG MODE)
ONE DATA FORMAT FOR THE 3 CASES

CONTINUOUS MODE

- RDH HB 0 OPEN
- PAYLOAD DATA
- RDH HB 0
- PAYLOAD DATA
- RDH HB 0
- PAYLOAD DATA
- RDH HB 0 CLOSE
- RDH HB 1 OPEN
- PAYLOAD DATA

TRIGGER MODE

CONTINUOUS MODE + TRIGGER

- RDH HB 0 OPEN
- RDH HB 0 CLOSE
- RDH HB 1 OPEN
- PHY TRG INFO
- PAYLOAD DATA
- RDH HB 1
- PAYLOAD DATA
- RDH HB 1 CLOSE