The Missing TKR Trigger Primitives

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Science Verification, Analysis and Calibrations
The Missing TKR Trigger Primitives

- For the 4 tower data we enabled the
  - 1-shot trigger
- See Steve's slides from May 25 Trigger meeting for details.
- Will this affect the latching of the TKR Trigger Primitives?
  - See Martin's talk in the June 8 Trigger meeting
  - Conclusion: Should not, but.....
- TKR and Online:
  - Only see 10% of the expected TKR trigger primitives.
- Do we see the same deficit in the SVAC data runs?
- In the following I will use the SVAC ntuple variable
  - TrgReqTriRowBits[iTower]
  - Bit encoded three-in-a-row combinations
  - Filled from the TKR trigger primitives
  - TrgReqTriRowBits[iTower]>0 means:
    - There are TKR trigger primitives from that tower
TrgTriRowBits in 2 Tower Data: Tower 0

TKR Trigger Primitives in Tower 0:
~53% of the events

No TKR Trigger Primitives in Tower 0
TrgTriRowBits in 4 Tower Data: Tower 0

TrgReqTriRowBits[0]>0 \{\text{GemConditionsWord}==2\}

No TKR Trigger Primitives in Tower 0

TKR Trigger Primitives in Tower 0:
\sim 2.5\% \text{ of all events}

Run135002769

<table>
<thead>
<tr>
<th>Entries</th>
<th>61451</th>
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<tbody>
<tr>
<td>Mean</td>
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<tr>
<td>RMS</td>
<td>0.1555</td>
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The Missing TKR Trigger Primitives

• 2 tower data: Tower 0
  – **Expect:**
    – ~50% of all events have TKR triggers from tower 0
    – Confirmed by looking at GemTkkrVector[0]
  – **Observe:**
    – 53% of the events have TKR trigger primitives in tower 0

• 4 tower data: Tower 0
  – **Expect:**
    – ~25% of TKR triggers from tower 0
    – Confirmed by looking at GemTkkrVector[0]
  – **Observe:**
    – 2.5% of the events have TKR trigger primitives in tower 0

• Same deficit is seen for the other towers.
• **This is being investigated by ELX, TKR and Trigger.**