#### Some Thoughts of the GP300 DAQ System

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2019.04.26

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- In the beginning we use one SINGLE server to receive the data
- Then we add more antennas



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- Then we add more antennas
- And more



- In the beginning we use one
  SINGLE server to receive the data
- Then we add more antennas
- And more
- The computer become overload



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 Then we split a big array into some smaller ones



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- Then we split a big array into some smaller ones
- We are happy again :-)



- Then we split a big array into some smaller ones
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- But wait, the coincidence determination becomes much more complicated
- Cross server data exchange is required :-/



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#### Even If We Have a Powerful Enough DaQ Machine



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#### Even If We Have a Powerful Enough DaQ Machine



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 Say we have an array configuration like this

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- Say we have an array configuration like this
- It is partitioned as this

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- Say we have an array configuration like this
- It is partitioned as this
- And some of the antennas are triggered in an event, but rejected, because of the number criterion

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- Say we have an array configuration like this
- It is partitioned as this
- And some of the antennas are triggered in an event, but rejected, because of the number criterion
- And in this set of partition, this event is accepted

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When one antenna is triggered, it will query its neighboring antenna.

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- If some number of neighboring antennas are also triggered, they will elect one master, and others will be slaves.

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- When one antenna is triggered, it will query its neighboring antenna.
- If some number of neighboring antennas are also triggered, they will elect one master, and others will be slaves.
- The master will collect the data from all slaves and send to the DaQ center

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▶ This scenario need to be refined, such as:

- When one antenna is triggered, it will query its neighboring antenna.
- If some number of neighboring antennas are also triggered, they will elect one master, and others will be slaves.
- The master will collect the data from all slaves and send to the DaQ center
- This scenario need to be refined, such as:
  - What if two events triggers two groups of antennas with overlaps?

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  - How to elect the master? (according to the trig timestamp?)

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Do currently available hardwares meet our requirement

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- If some number of neighboring antennas are also triggered, they will elect one master, and others will be slaves.
- The master will collect the data from all slaves and send to the DaQ center
- This scenario need to be refined, such as:
  - What if two events triggers two groups of antennas with overlaps?
  - How to elect the master? (according to the trig timestamp?)
  - Do currently available hardwares meet our requirement (point-to-point communication, no data exchange through switch).

### Thanks

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