Helicity Signal

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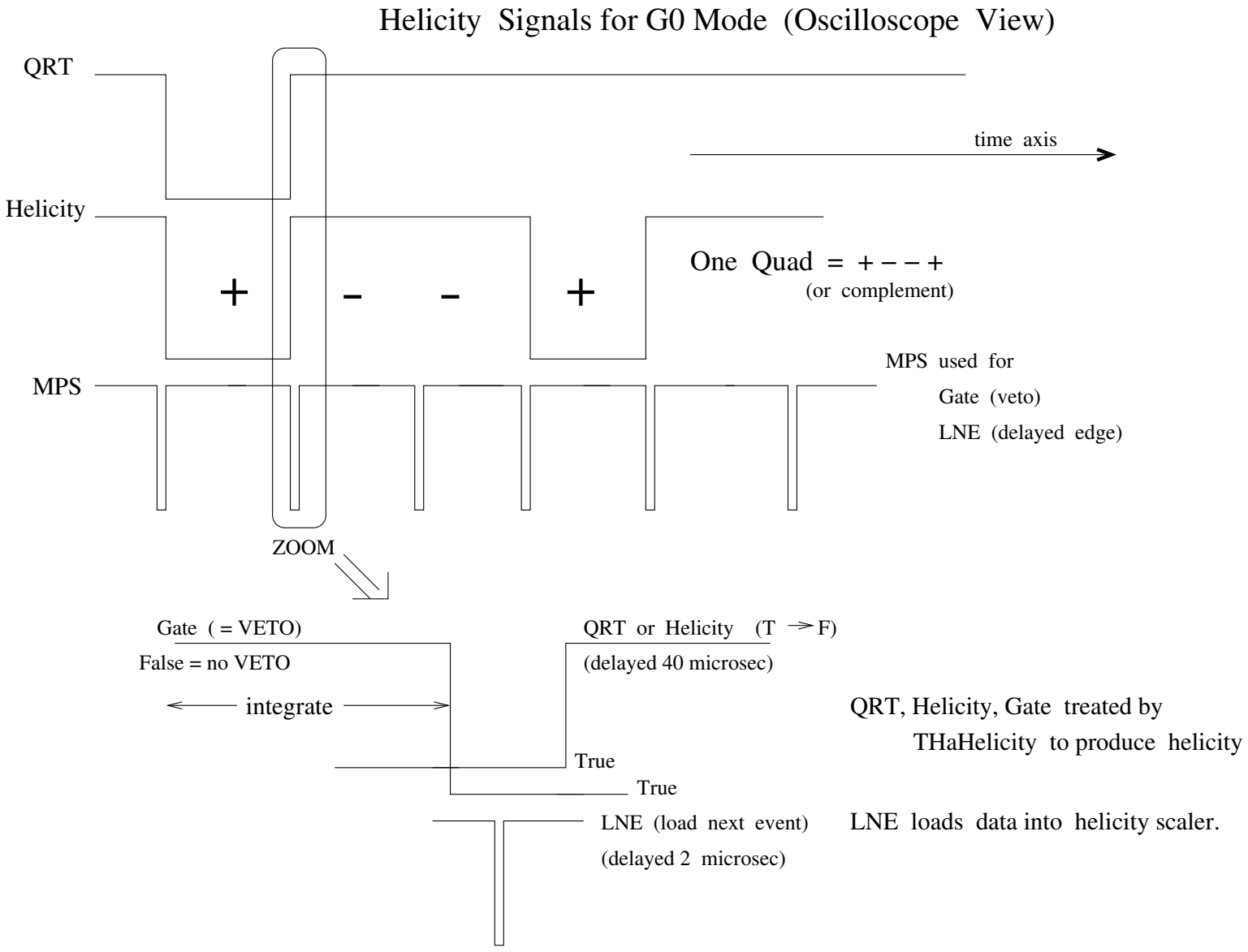
How we Use Helicity

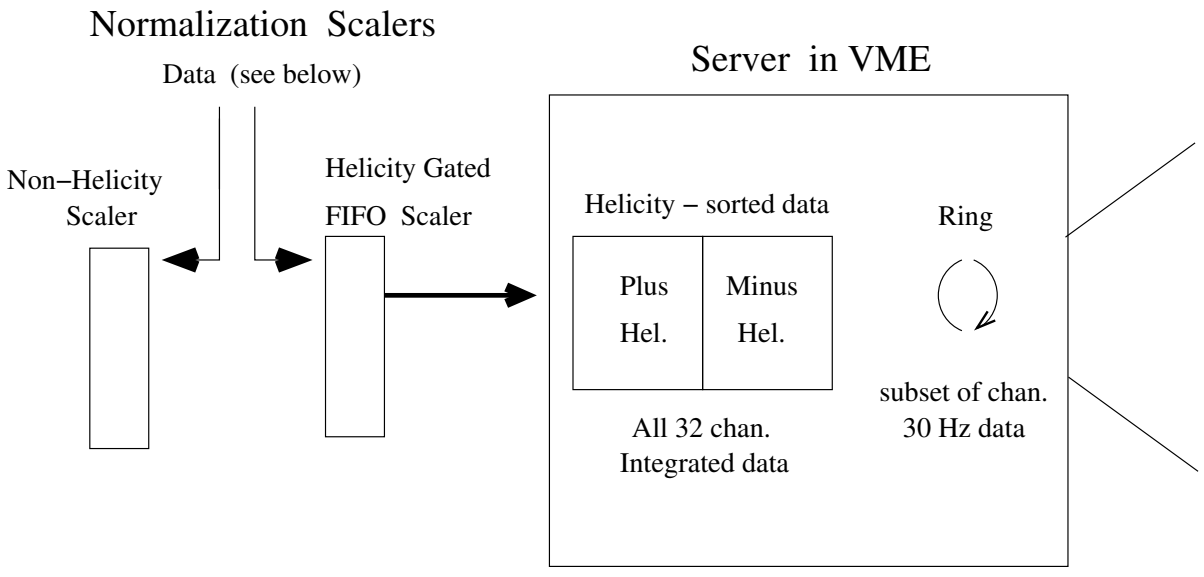
- In Triggered Datastream
  - Bits are read via I/O or ADCs
  - THaHelicity analysis (O. Hansen, V. Sulkosky)
  - Radiation on floor $\rightarrow$ bit errors
  - Redundancy important
- Scalers
  - Helicity signals sent to control inputs
  - Data sorted online and read out from VME
  - Server provides data to clients

Beam Helicity Signals



Present Scaler Setup

Scalers –– Present Version –– no Target gating



Online Display (xscaler)

Event Type 140 (integrated data)
Uses ET to insert (asynch)

ROC –– synch readout ea 200 ets
includes ring data

Event Type 100
Final reading for the run

Halog –– data from final reading

FIFO mode needed if helicity delayed.

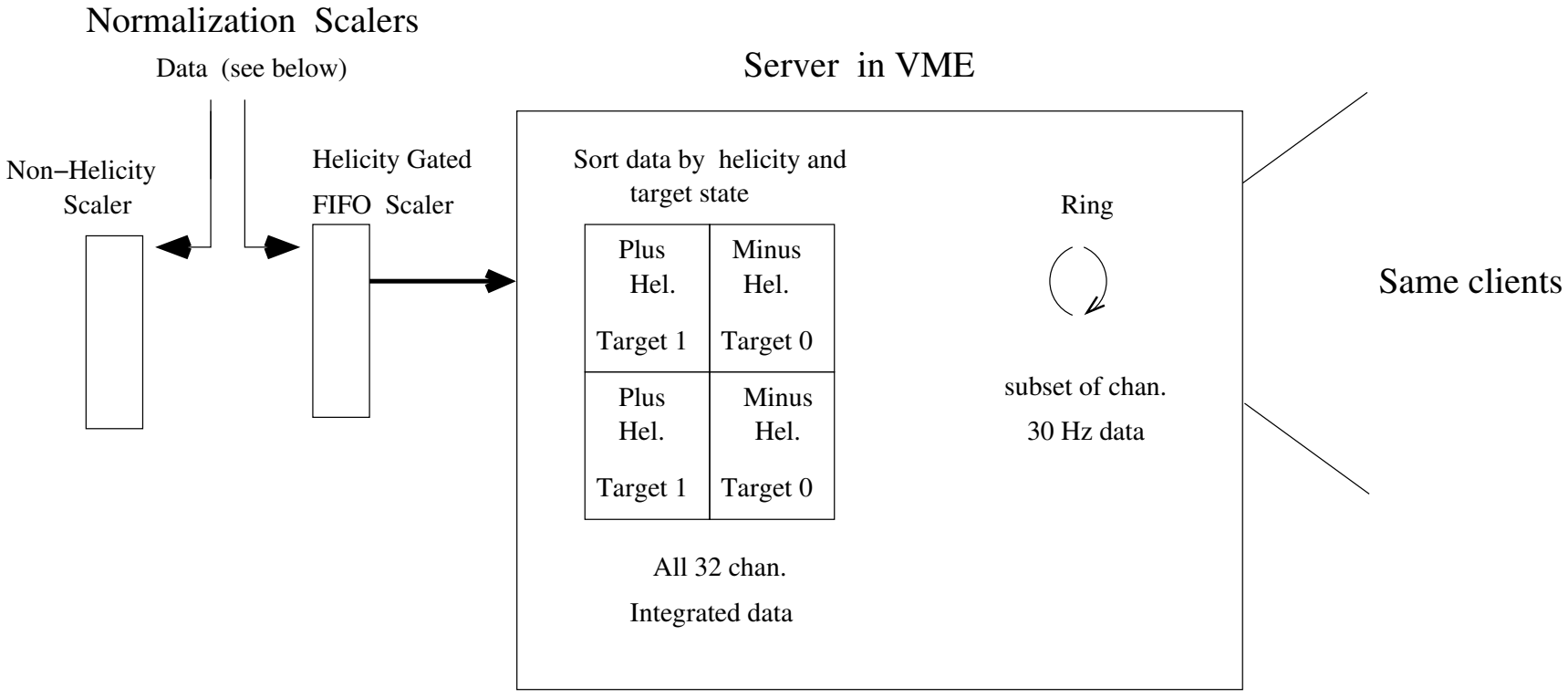
Data to Include :

- Triggers of each kind
- BCM u1, u3, u10, d1, d3, d10
- DAQ rate (L1A signal)
- Clocks, helicity signals

Transversity Scaler (Idea 1)

Using the Target State Info -- goes to Control Input

(Note: this requires a real−time target state signal)



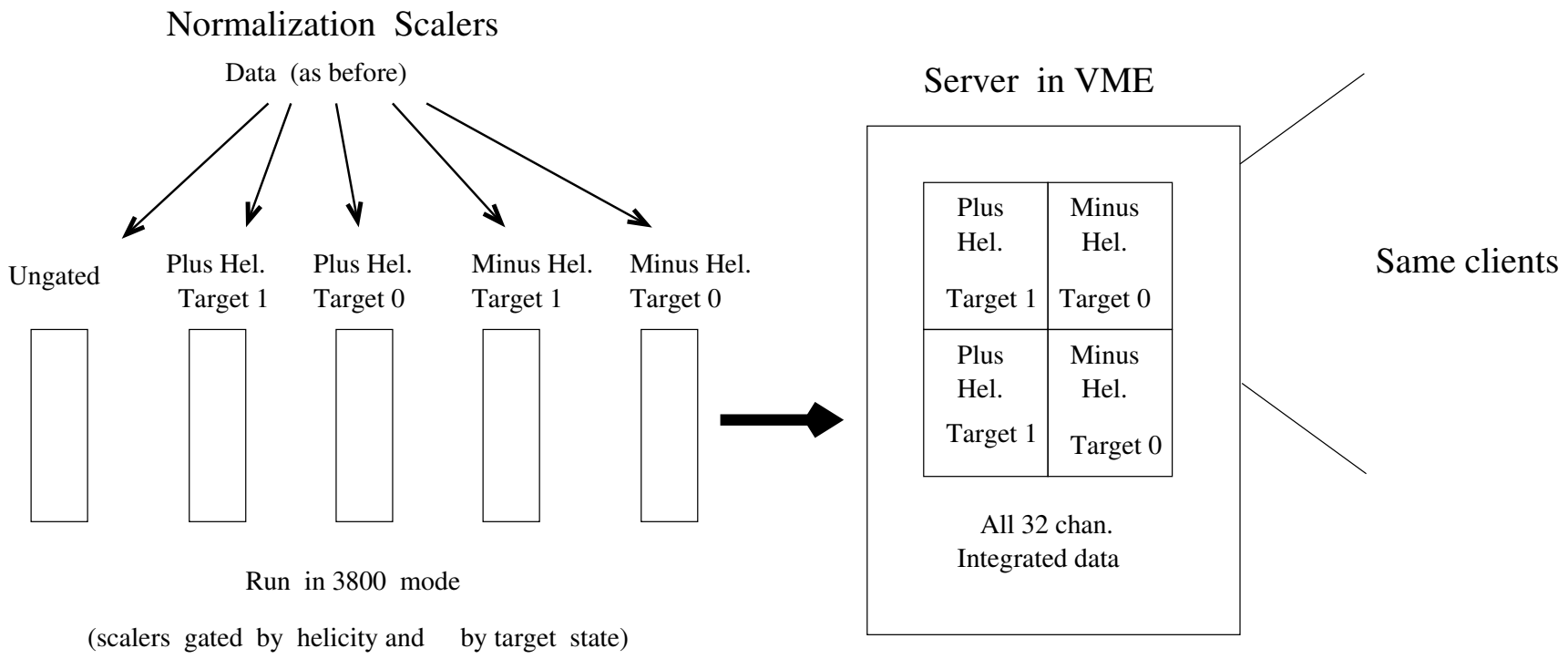
Data inputs -- same as before

Warning: best to do this out of radiation area.

Transversity Scaler (Idea 2)

Using the Target State Info -- used to help form a gate

(Note: this requires a real−time target state signal)



This works because helicity (and target info) are in real−time (not delayed)

Misc. Issues

- Need Sign Check
  - Run with 1% A_Q to calibrate to Møller
  - Need statistics in triggered-data
- Recent Problems
  - Unannounced changes: QRT invert, MPS early
  - Crosstalk HAPPEX DAQ in NIM $\rightarrow \sim$12 bad runs
  - Problem fixed