CDR Software and Computing Chapter

CDR Computing Chapter:

- Sections: **Computing Infrastructure** and **Reco Software**

Computing Infrastructure needs to plan, cost and schedule:

- Tape & Disk for raw + sim + processed data
- Data distribution and distributed processing

Estimating **data rate is (still!) a big unknown**, depends on important global decisions and requires expertise from many collaborators.

- What zero-suppression threshold(s)?
- What triggering strategy?
- What rates and event sizes?
- Different answers for different physics/studies.

Current Estimation Procedure

Capture Estimation in 4 Tables:

1. Raw **interaction rates** and **event sizes** of various sources
2. **Min** (can do no better) and **Max** (will do worse) **thresholds** as a function of physics.
3. From this, get **data volumes** per analysis/scenarios.
4. The above is in `annex-rates` document, summary roll up table for CDR-proper.

Source	rate	time	RO size	volume/year
full stream	1/2ms	$3 * 10^7$ sec	9.2GB	138 EB ($10^{18} B$)
ZS stream	10 % of full stream			13.8 EB ($10^{18} B$)
beam (>500 MeV)	10^3/yr.	year	10MB	100GB
ν_{atm}	similar to beam			100GB
SNB	ZS stream	60secs/year $\times$??	28 TB	28 TB $\times$???
noise	???	???	???	???
rad	???	???	???	???
cosmic μ	???	???	???	???
sol	???	???	???	???
minbias	multiple, variable, threshold dependent			???
beam minbias	multiple, variable, threshold dependent			???
calib	???	???	???	???

"???" == bad! We need help filling this in.

Without input we can't have a design, cost, schedule.....

Input Needed For Data Rate Estimates

- Attempting one estimation approach, may not be the best.
- Current DAQ design can accommodate many scenarios.
  - (Too) Many options!
  - Need to pick one for data rate estimates while still somehow addressing the diversity.
- Need input from the physics groups:
  - Input on what ZS and other thresholds to assume.
  - Input on event sizes, checking rates.

Come for S&C "office hours", Friday 09:00 - 10:30, Wilson Hall 2NW (Black Hole) to provide input and make some plans.