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Report from the Data Set Reduction Working Group

Outline:

1. Data reduction milestones

2. Reduced data set status

Data Reduction Milestones
(form last meeting)

Task	Responsible (Contributor)	Status
Data Distribution Template	Strom/Brau (P. Shawhan)	Draft
DMT Decimation (Modification to RDS writer)	Mauceli (P. Fritschel)	Prototype
Reduction Benchmarks	Strom	Draft
Wavelet Compression Test	Klimenko	Finished
Linear Predictors	Zotov	Starting

Data Distribution Templates

Best information is on

http://blue.ligo-wa.caltech.edu/engrun/

from Peter Shawhan, et al.

Additional information for beginners is on

http://zebu.uoregon.edu/~strom/dr/data-dist.html

Data Reduction Benchmark

(suggested by S. Klimenko)

Define loss, L, as

$$L = < ((x_o - x_c)/ < x_0 >)^2 >$$

where x_0 is the original value and x_c is the compressed value. (For some signal $< x_0 >$ should be replaced by σ_{x_0})

Provisionally require that $L < 2\%$ (?).

CPU benchmark, compare:

- differentiation $+$ gzip (used for 40m data)

- current frame library algorithm

- algorithm under study

DMT Decimation
(Mauceli/new Oregon Postdoc)

Prototype version used to decimate data for tiltmeter study (see my other talk).

Present Filters in DMT could not be used blindly for decimation.

New DMT decimate by 2 may be sufficient for first version.

Still to do:

- Improve filters to allow for an arbitrary bandwidth (perhaps use wavelet transform?)

- Implement option for lossy wavelet compression.

- Produce a reduced data set which can be used to test the lossy wavelet compression.

Reduced Data Sets

- Reduced data set strawman proposed at winter meeting (no-feedback) ($\sim$ 200 kB/s)

- Engineering test run probably a better strawman, but a bit too large (684 kB/s)

- Reduced data will be useful for future test runs

Contribution from various channels in first test run: (from P. Shawhan's web page)

Channel Type	rate (samples/s)
Primary Arm Cavity	51k
Primary Mode Cleaner	37k
Pre-Stabilized Laser	101k
Mode Cleaner Suspension	4k
Large Optic Suspensions	41k
Optical Levers/Alignment	41K
PEM	125K
Total	400K

What was missing from engineering run?

Your suggestions needed:

- Monitor of "mains" (e.g. 60 Hz phase, etc)

- …