



# Bit Error Rate Tester for LVDS

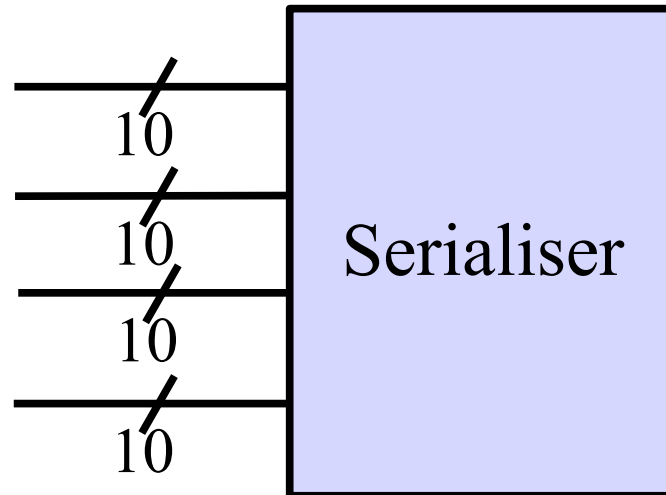


# Overview

- Serialiser code modified to include BER tester for LVDS
- Introduced error\_comparator within serialiser
- Fill RAM in serialiser with known data pattern
- Synchronise with incoming data and check for errors

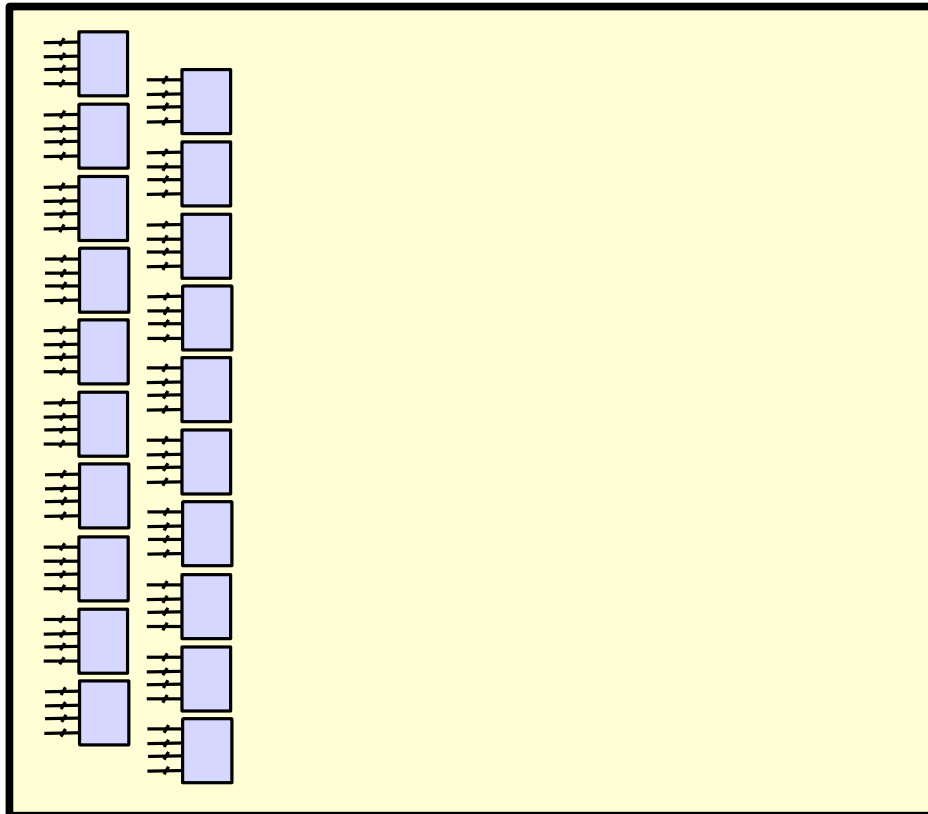


# Progress





# Progress





# Bit Error Rate Level

Test BER of LVDS: Error rate of  $10^{-13}$  tolerated

Overnight run:

8 hours

x 40 MHz

x 20 serialisers

x 4 channels

x 10 bits

$$= 4.6 \times 10^{13} \quad \text{—} \quad \text{BER} = 2 \times 10^{-14}$$



# Pseudo-Random Data Generator

- Generate pseudo-random data within serialiser to mimic data generated in DSS
- Using LFSR and same seed as for DSS, able to produce same data
- Use error\_comparator to synchronise and compare this against received data

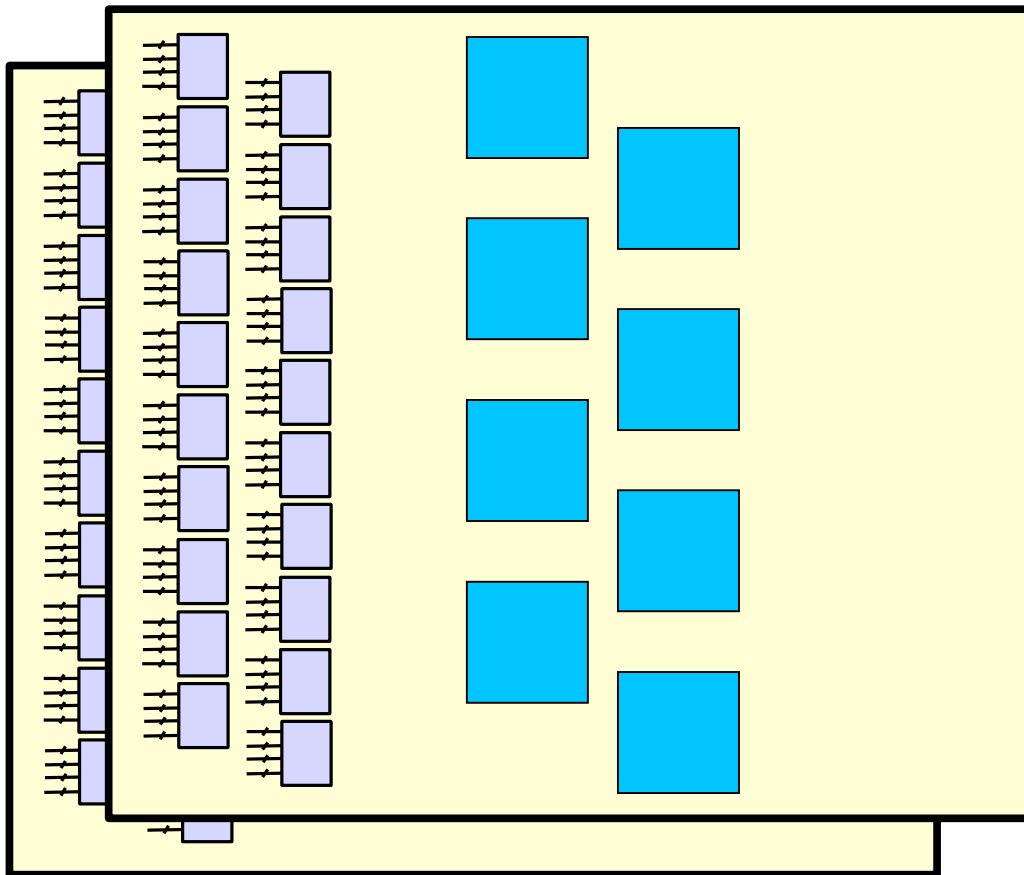


# Pseudo-Random Data Generator

- Received relevant code off James
- Currently modifying error\_comparator in serialiser to generate data
- Can then re-run tests to fully measure BER



# Future plans







# Summary

- BER:  $2 \times 10^{-14}$  tested with 128-word pattern
- Generate random data to test all bits fully
- Re-run tests for all serialisers
- Run tests on 2 CPMs to check for cross-talk
- Convert for similar tests on CP chips



Any feedback:  
[thm@hep.ph.bham.ac.uk](mailto:thm@hep.ph.bham.ac.uk)

Only two things are infinite: the Universe and human stupidity, and I'm not sure about the former.  
-- A. Einstein.