

SAS-2 usage of StatEye

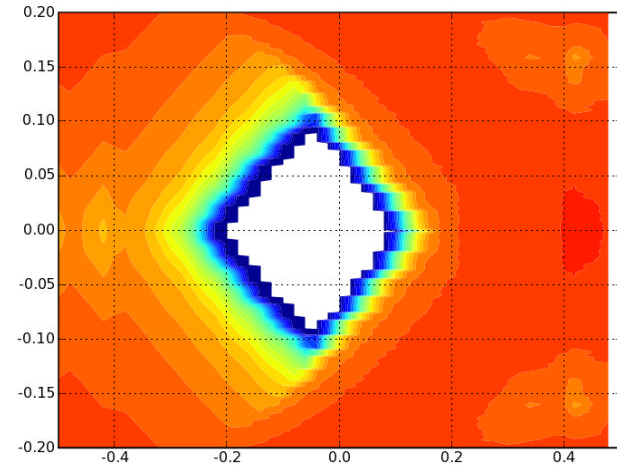
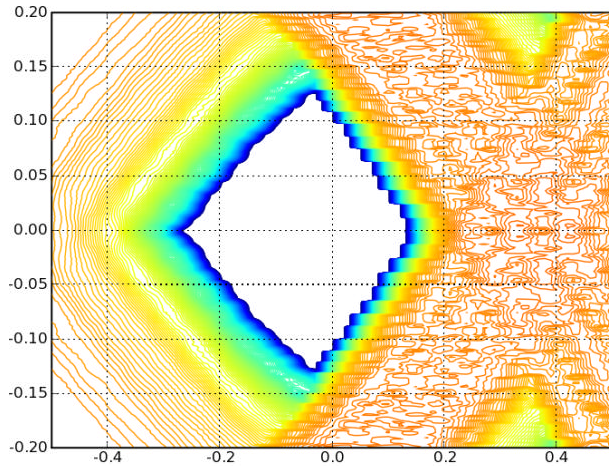
Wednesday, 03 Oct 07

T10/07-439r0



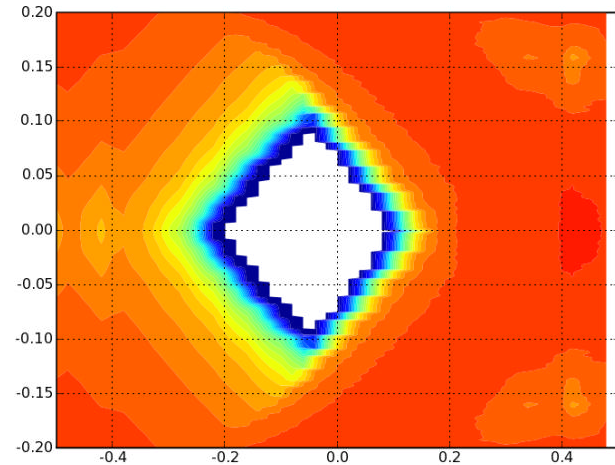
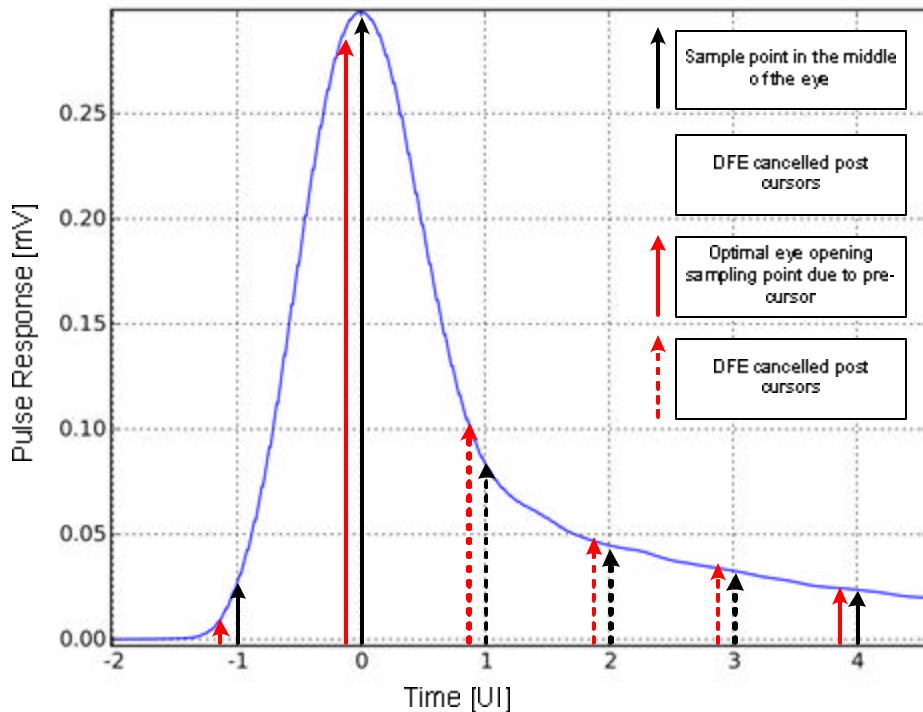
Never stop thinking

Contour Algorithm



- The initial wiggly contours observed in the StatEye (left) are merely a by-product of the high accuracy with which the contour algorithm was called. This is not necessary and usually must lower resolution is sufficient (right)
- Please note these two examples are not supposed to be the same result, and are only to demonstrate the contouring algorithm

Asymmetry in the eye opening



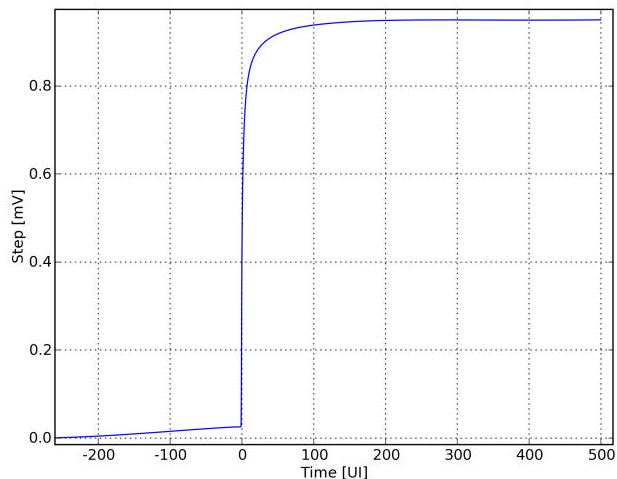
- Firstly, the graphing routines are not performing the automatic centring of the eye at the 0.0 point on the x-axis. This is a minor detail which will be implemented next, along with amplitude indication and eye masking
- Secondly, when utilising DFE a slight shift in the peak of the eye, with respect to the average transition point can easily occur due to the influence of the pre-cursor

DC Extrapolation and Causality

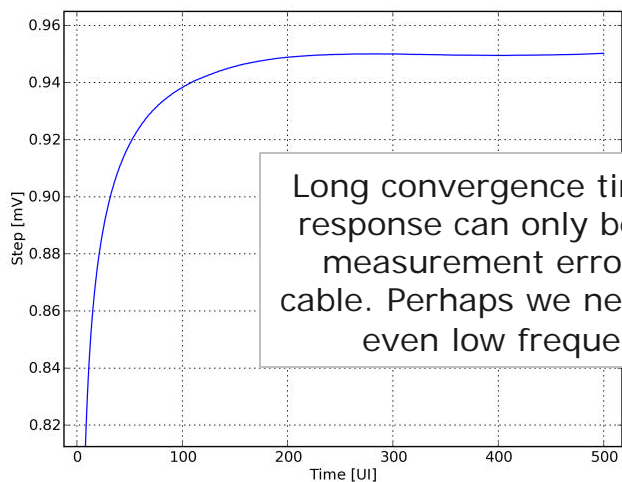
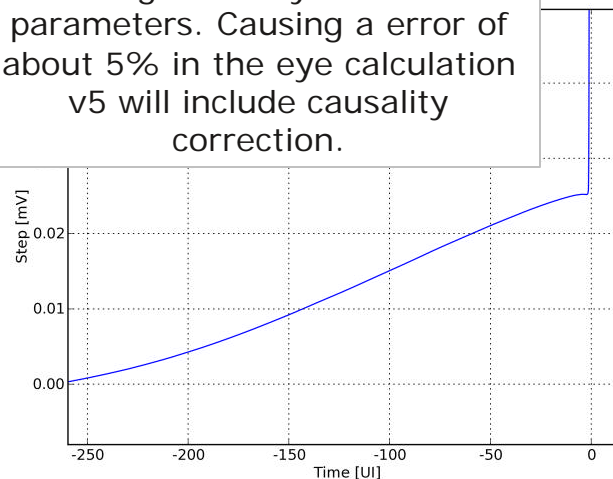
These phenomena are inherent in any analysis using the s-parameters as a basis



Step Response

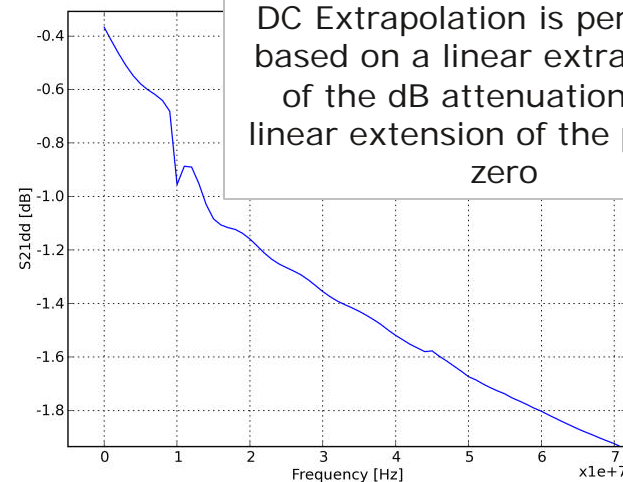


Zoomed Step Response showing causality error in S-parameters. Causing a error of about 5% in the eye calculation v5 will include causality correction.

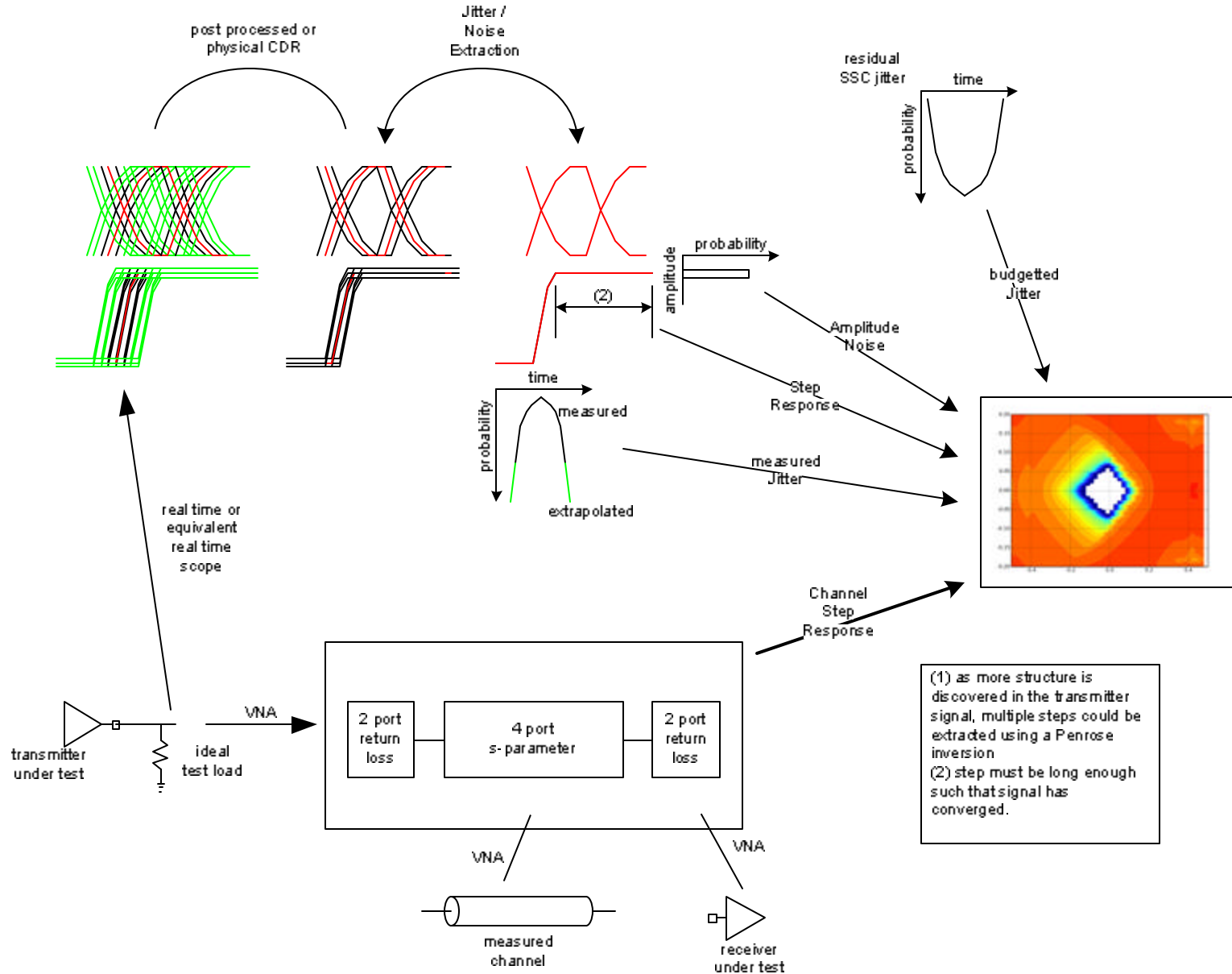


Long convergence time of step response can only be result of measurement error of long cable. Perhaps we need to go to even low frequencies?

DC Extrapolation is performed, based on a linear extrapolation of the dB attenuation and a linear extension of the phase to zero



Use Model



Use Model

- Transmitter Compliance
 - Transmitter under test is measured
 - Channel is reference model
 - Receiver is reference model
 - residual jitter due to SSC can be optionally added
- Channel Compliance
 - Transmitter is reference model
 - Channel under test is measured
 - Receiver is reference model
- Receiver Tolerance
 - Transmitter of test equipment is measured
 - Channel is measured
 - Receiver under test is measured

v5 Acceleration

```
In [3]: execfile('testcase.py')  
loading file  
finished in 37.0 sec  
creating step responses  
generating time step  
finished in 4.5 sec  
creating transitions  
Extracting cursor 1, found 0.084  
Extracting cursor 2, found 0.045  
Extracting cursor 3, found 0.033  
finished in 3.5 sec  
calcing pdf  
finished in 183.2 sec
```

< - pure setup time of touchstone

Original code was not optimised for speed, only demonstration. v5 should be capable after final release of solving a full statistical analysis of a 8b10b coded signal with DFE and de-emphasis in less than 1 minute.