SPE Multidrop Enhancements
Mixing Segment Considerations

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Chris DiMinico/MC Communications/PHY-SI LLC/SenTekse/Panduit
cdiminico@ieee.org
Bob Voss/Paul Wachtel/Panduit

Background

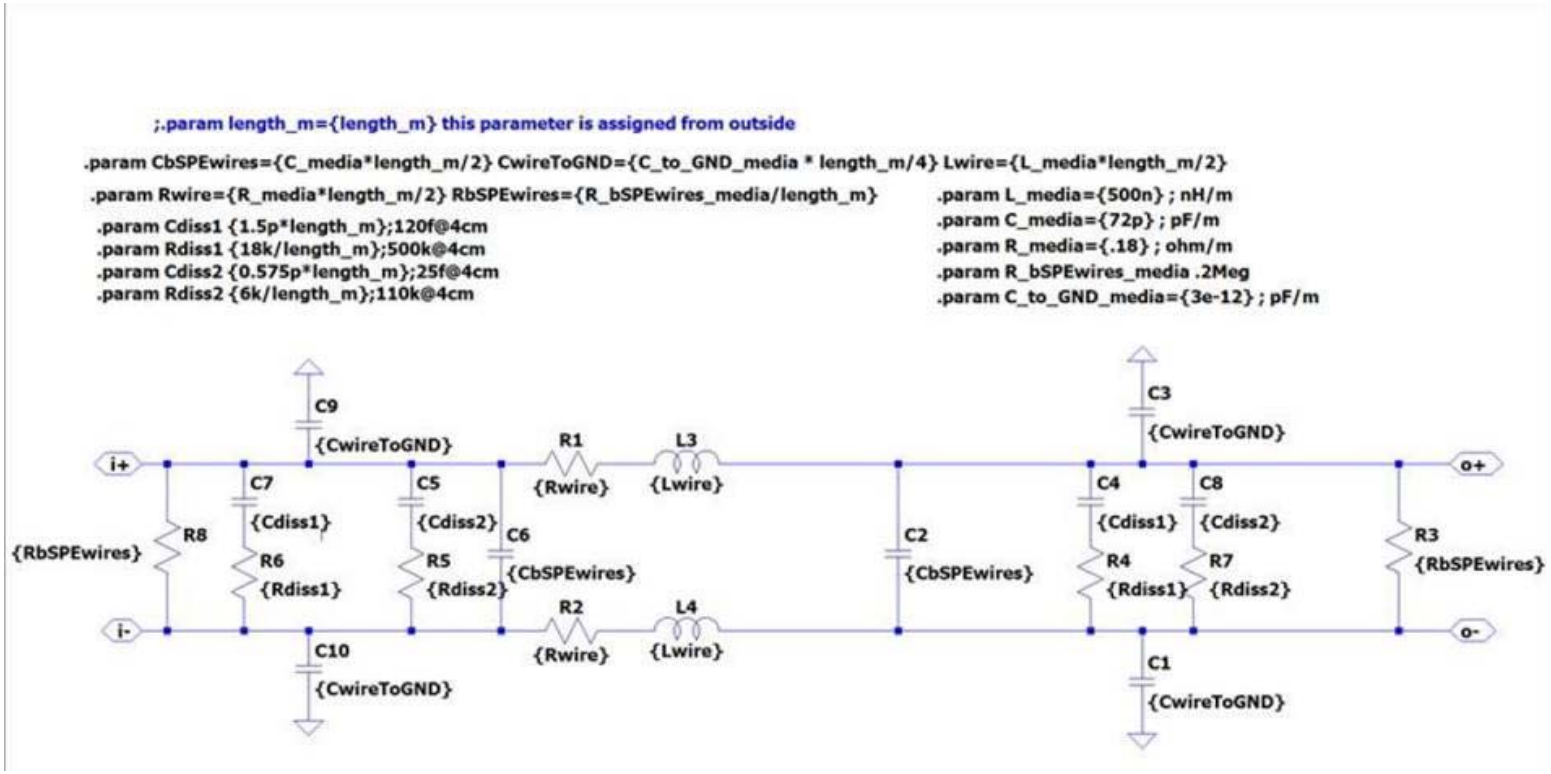
- Measurement configuration results for LTspice model validation demonstrated.
  https://www.ieee802.org/3/da/public/051921/diminico_SPMD_01_0521.pdf
- Next Steps
  - Transient analysis for RX eye

Purpose

- New cable model developed to use with transient analysis for RX eye
  - Cable model transmission characteristics consistent with prior cable model

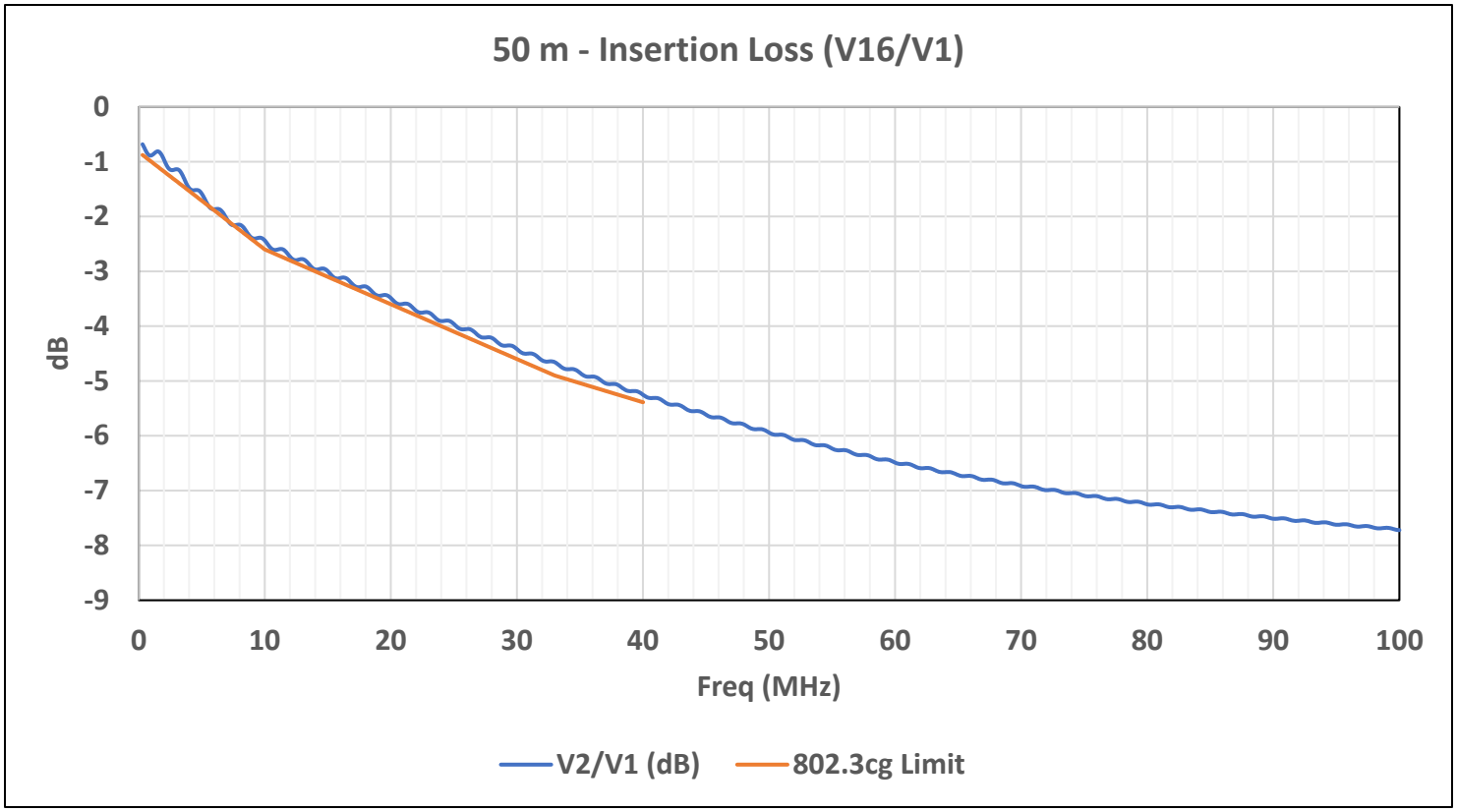
Cable Model - Wojciech Koczwa - Rockwell

A single pi section of cable below with variable length depending on length_m parameter; 1mm-20cm illustrated below



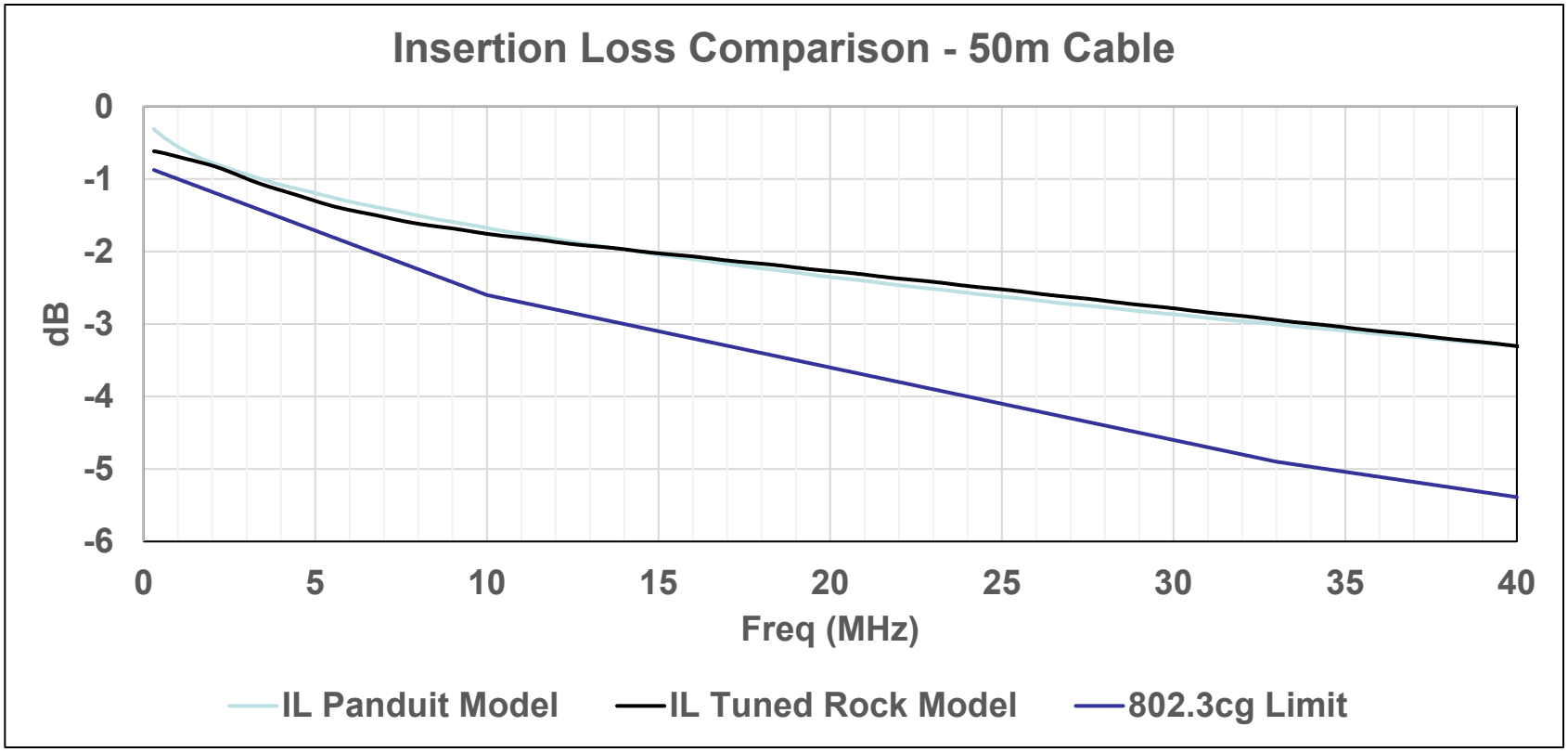
Cable Model – 50 m - Wojciech Koczwa - Rockwell

- Cable model at 802.3cg limit – “limit cable”



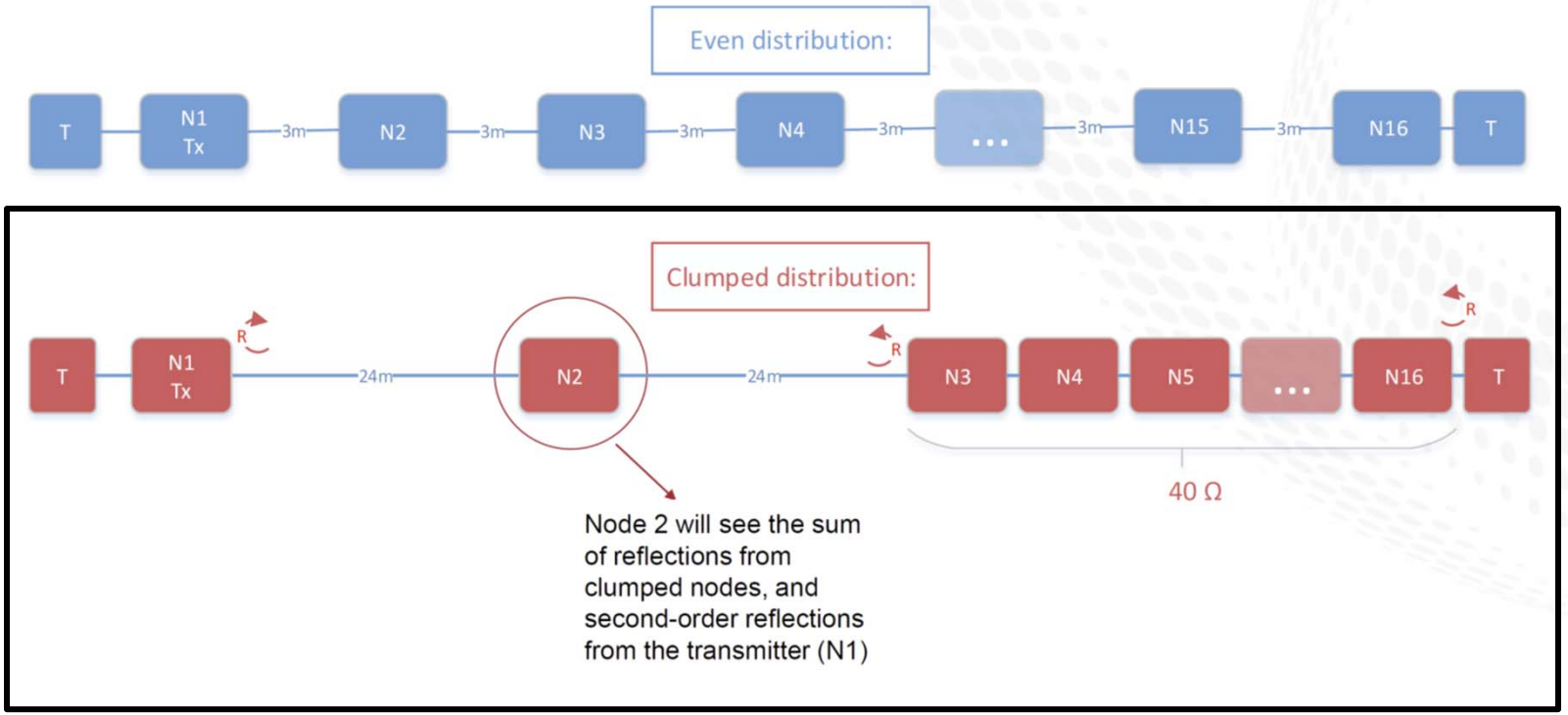
Cable Model – 50 m – Panduit

- Cable model transmission characteristics consistent with prior cable model



Clumped Distribution Analyzed

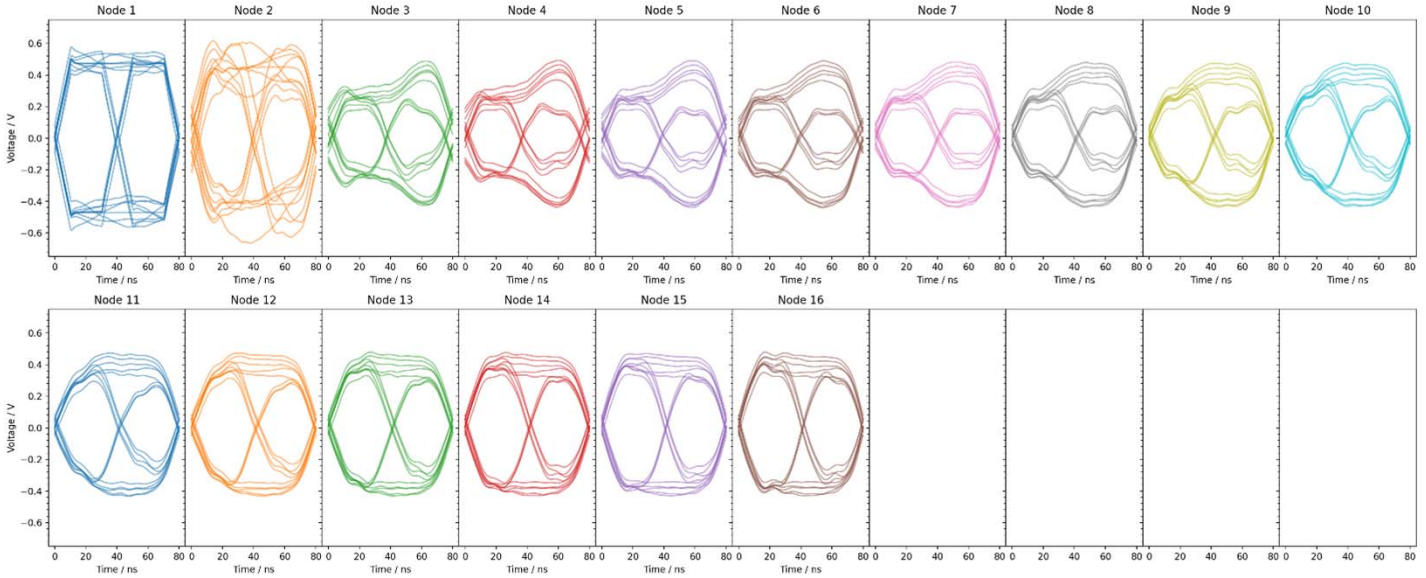
Node distribution – time domain simulation



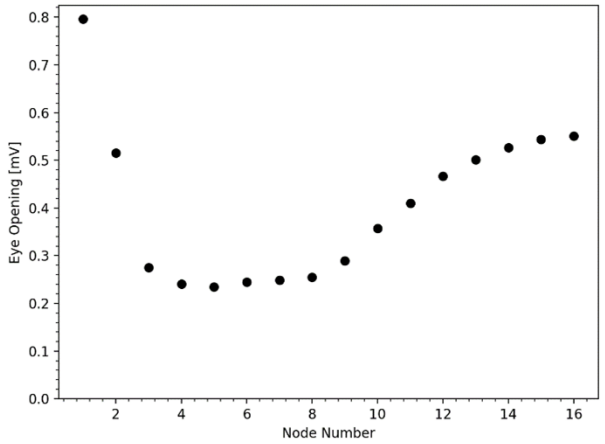
Source:
Koczwara_Griffiths_Brandt_MultidropNodeDistributionChallenges_20201202_v1.1.pdf

Clumped Distribution Transient results – 50 m Limit Cable

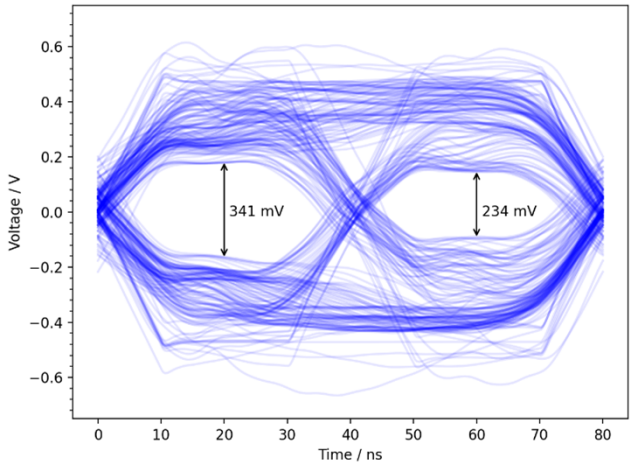
Multi-eye



Multi-eye distribution

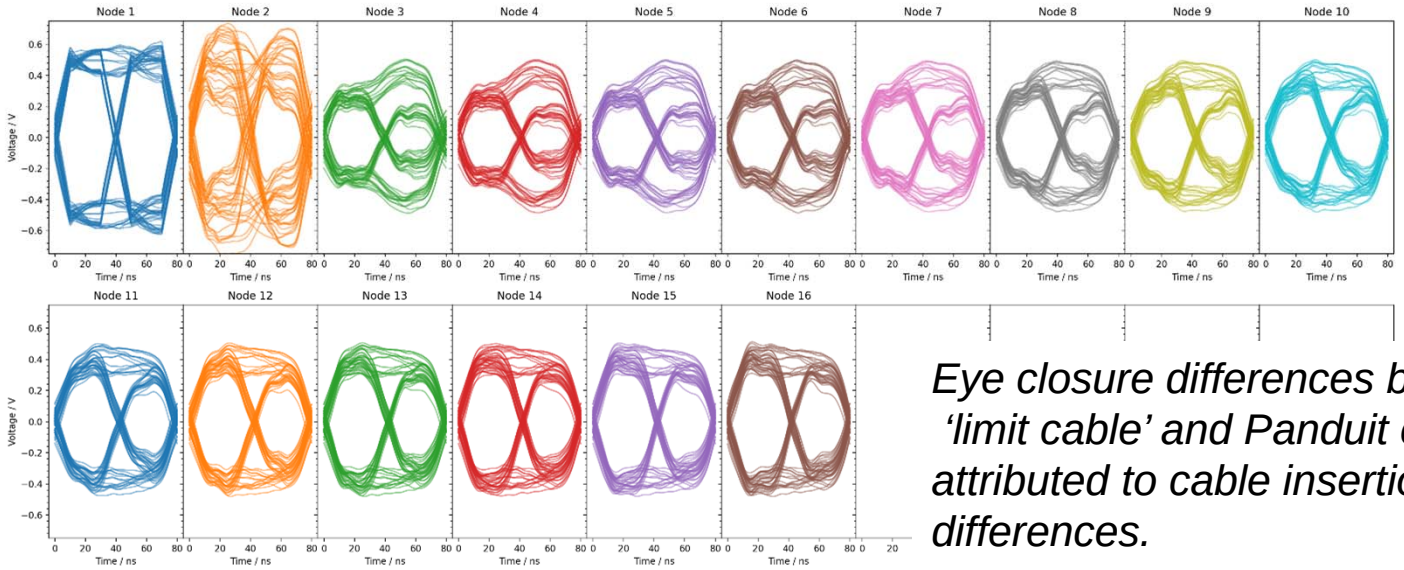


Combined-eye



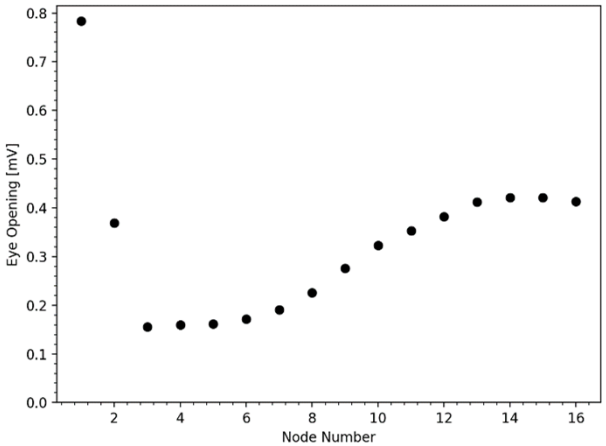
Clumped Distribution Transient results – 50 m Panduit Cable

Multi-eye

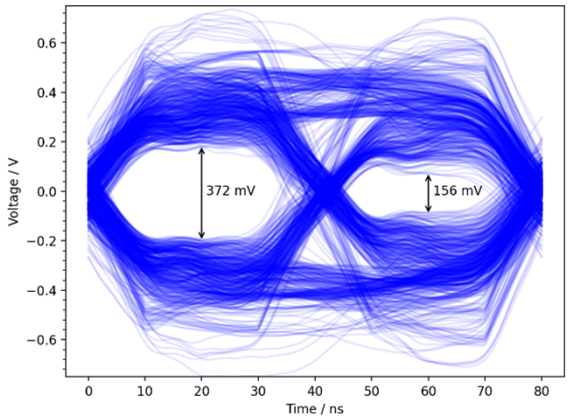


Eye closure differences between 'limit cable' and Panduit cable attributed to cable insertion loss differences.

Multi-eye distribution



Combined-eye



Summary

- New cable model developed to use with transient analysis for RX eye
  - Cable model transmission characteristics consistent with prior cable model
- Eye closure differences between ‘limit cable’ and Panduit cable attributed to cable insertion loss differences.
- Validated cable models with transient results to be applied to mixing segment proposal(s)