

# IBIS-AMI and Statistical Analysis

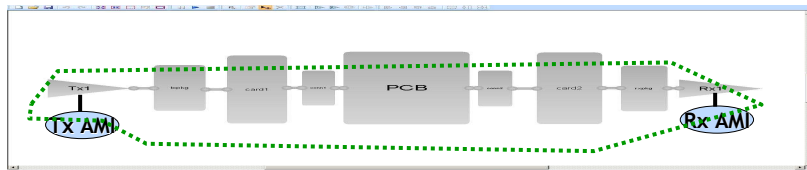
Kumar Keshavan  
Sigrity Inc

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in High Speed Serial Channel Design



## IBIS-AMI Key Concepts

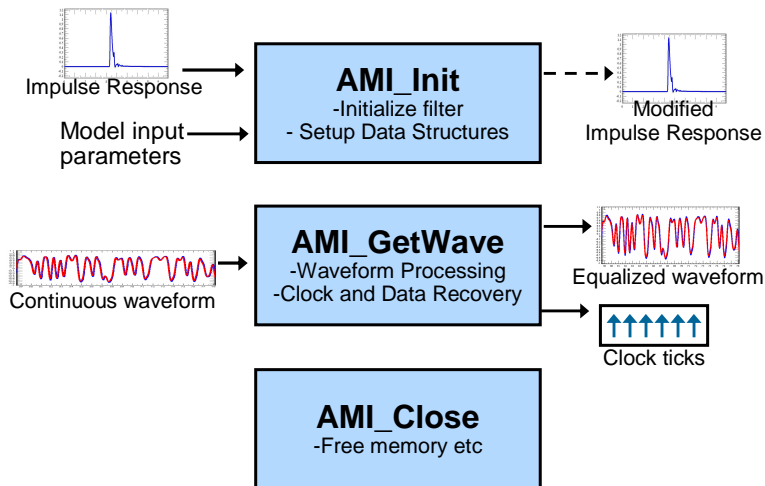
- The Tx -to- Rx pathway is composed of 3 separate entities
  - Tx algorithmic part
  - The analog channel
  - The Rx algorithmic part
- Three “decoupled” parts can be *independently* solved in time domain
- Executable model delivered as a dynamically linked library (DLL)
  - Data flow between these three parts is addressed by the standardized API
  - Robust and flexible parameter passing to Tx & Rx



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## IBIS AMI Data Flow API



## IBIS-AMI and Statistical Analysis

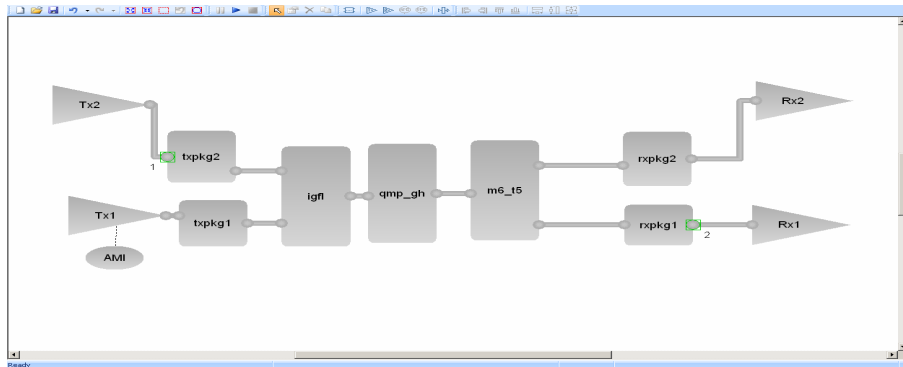
- **AMI “LTI” Models**
  - No AMI\_GetWave call
  - Returns Modified Impulse Response (LTI Characterization)
  - Supports Time Domain Analysis
  - Supports Statistical Analysis
- **AMI “Non-LTI” models**
  - Uses AMI\_GetWave call
    - Cannot assume to know inner workings of DLL “black box”
  - Supports Time Domain Analysis



## Statistical Analysis vs. Time Domain Analysis

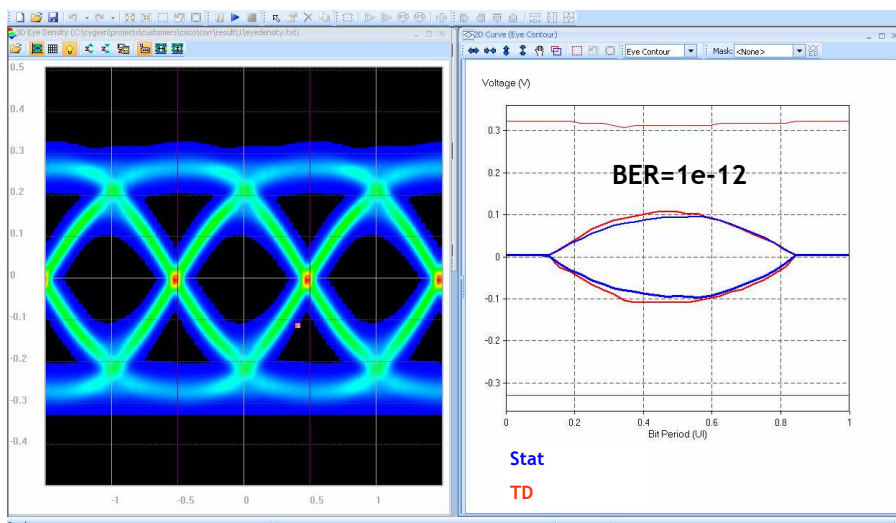
### Case 1:

- LTI system, Tx FFE filter, Ideal CDR at Rx
  - No transmit jitter



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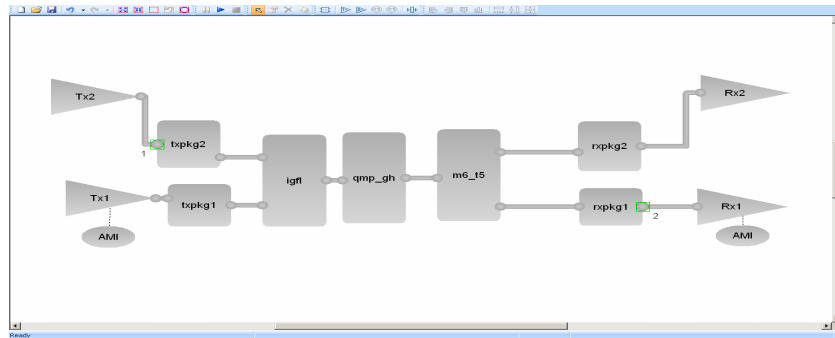
## Case 1: Results



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## Statistical Analysis vs. Time Domain Analysis

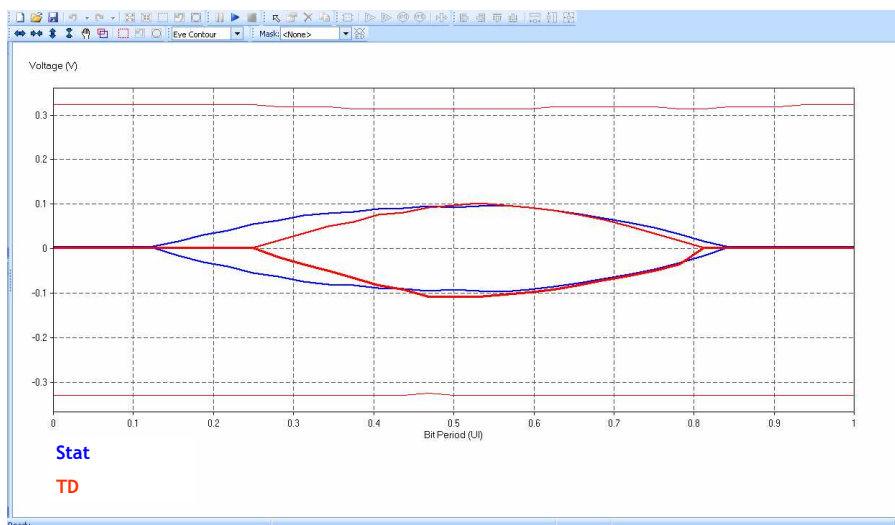
- Case 2:
  - LTI system, Tx FFE filter, Real CDR at Rx, DFE Off
    - Tx jitter, Rx jitter, and frequency offsets



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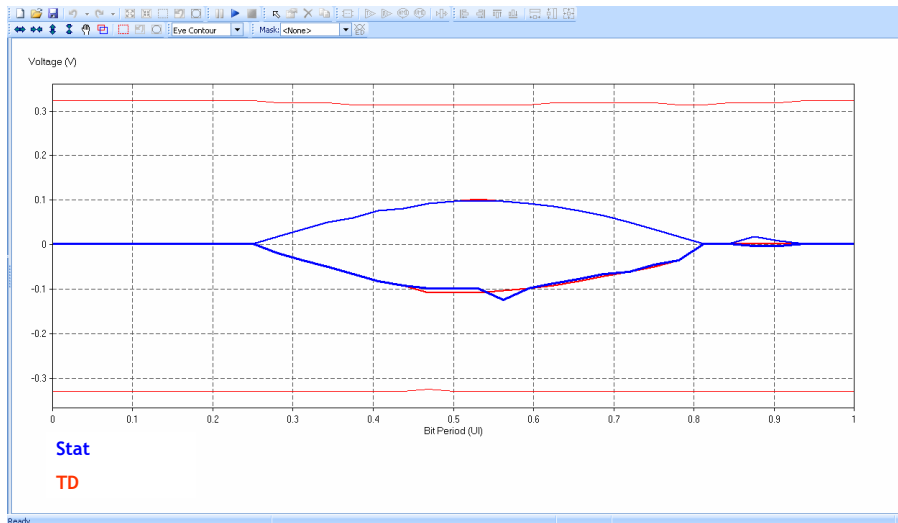
## Case 2: Results



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## Case2: Results with *Modified* Statistical Analysis



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## Summary

- For LTI models, both Statistical and Time Domain Analyses can be fully supported
- For non-LTI models, direct Statistical Analysis **cannot** be generally supported
- ***AMI models using AMI\_GetWave call are incompatible with purely Statistical techniques***
- Our recommendation is for non-LTI models to use Time Domain analysis

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*Thank You!*

